VOLUME 16

US010254067B2

(12) **United States Patent**
Foster

(10) **Patent No.: US 10,254,067 B2**
(45) **Date of Patent: Apr. 9, 2019**

(54) **TRIGGER-LOCKING APPARATUS, SYSTEM, AND METHOD FOR SEMIAUTOMATIC FIREARMS**

(71) Applicant: **FOSTECH MFG LLC**, Seymour, IN (US)

(72) Inventor: **David Foster**, Seymour, IN (US)

(73) Assignee: **FOSTECH, INC.**, Seymour, IN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/419,460**

(22) Filed: **Jan. 30, 2017**

(65) **Prior Publication Data**

US 2017/0219307 A1 Aug. 3, 2017

Related U.S. Application Data

(60) Provisional application No. 62/311,807, filed on Mar. 22, 2016, provisional application No. 62/288,385, filed on Jan. 28, 2016.

(51) **Int. Cl.**

F41A 17/46	(2006.01)
F41A 19/06	(2006.01)
F41A 17/76	(2006.01)

(52) **U.S. Cl.**

CPC ***F41A 19/06*** (2013.01); ***F41A 17/76*** (2013.01)

(58) **Field of Classification Search**

CPC F41A 17/48; F41A 17/68; F41A 17/46; F41A 17/32; F41A 17/42; F41A 17/74; F41A 17/76; F41A 19/02; F41A 19/24; F41A 19/26; F41A 19/25; F41A 19/27; F41A 19/30; F41A 19/45

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,039,814	A *	5/1936	Loomis	F41A 17/48 42/20
2,869,269	A *	1/1959	Couture	F41A 17/32 42/70.01
3,196,747	A *	7/1965	Gallagher	F41A 19/31 42/69.02
3,292,492	A *	12/1966	Sturtevant	F41A 19/02 89/128
3,553,877	A *	1/1971	Welch et al.	F41A 17/02 42/70.01
3,845,688	A *	11/1974	Seecamp	F41A 19/45 89/146

(Continued)

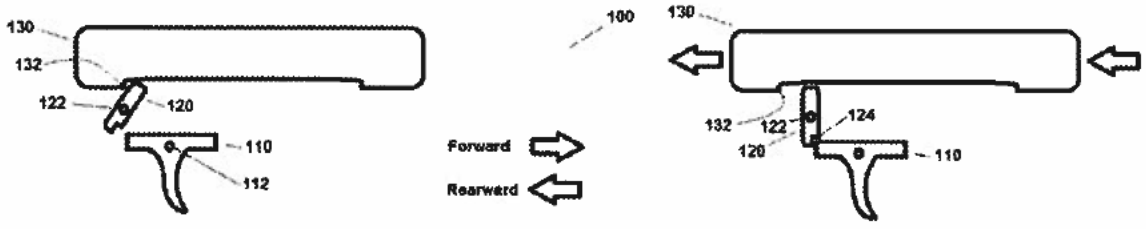
Primary Examiner — Derrick R Morgan

(74) *Attorney, Agent, or Firm* — Roberts IP Law; John Roberts

(57) **ABSTRACT**

Provided in various example embodiments is an apparatus, system, and method for improved control of selectable dual mode trigger systems for semiautomatic firearms, which may include a timed locking mechanism incorporated in the trigger system that ensures that the carrier is seated before the hammer is actuated, and that the anti-hammer-follow disconnect does not engage out of sequence. Such a mechanism ensures that the necessary steps occur in the proper sequence in the trigger mechanism, so that at any given time the trigger and firearm are ready for the next desired function to occur. The addition of a timed trigger lock mechanism to the trigger as disclosed herein ensures that the sequence of events in the trigger is maintained in the proper relationship, preventing misfires and jams. Such trigger locking mechanisms have applicability beyond dual-mode trigger systems, and may be applied in various forms to semiautomatic firearms generally.

18 Claims, 4 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

3,924,599	A *	12/1975	Hammond	F41A 17/48 124/40
4,004,496	A *	1/1977	Snodgrass	F41A 19/02 89/129.02
4,023,465	A *	5/1977	Inskip	F41A 19/03 89/131
4,308,786	A *	1/1982	Hayashi	F41A 19/44 89/144
4,499,684	A *	2/1985	Repa	F41A 19/17 42/69.01
4,555,861	A *	12/1985	Khoury	F41A 17/72 42/69.01
4,697,495	A *	10/1987	Beretta	F41A 11/00 89/142
5,216,190	A *	6/1993	Tanaka	F41A 17/48 42/69.02
5,718,074	A *	2/1998	Keeney	F41A 19/45 42/69.01
7,398,723	B1 *	7/2008	Blakley	F41A 19/12 42/69.01
7,562,614	B2 *	7/2009	Polston	F41A 19/33 42/69.03
8,667,881	B1 *	3/2014	Hawbaker	F41A 19/46 42/69.01
8,820,211	B1	9/2014	Hawbaker	
9,970,724	B1 *	5/2018	Acker	F41A 17/46
2009/0044438	A1 *	2/2009	Yollu	F41A 17/30 42/70.06
2011/0167697	A1 *	7/2011	Geissele	F41A 19/16 42/69.03
2012/0144712	A1 *	6/2012	Rostocil	F41A 9/79 42/16
2014/0259845	A1 *	9/2014	Johnson	F41A 19/09 42/69.01
2018/0087860	A1 *	3/2018	Sullivan	F41A 17/46

* cited by examiner

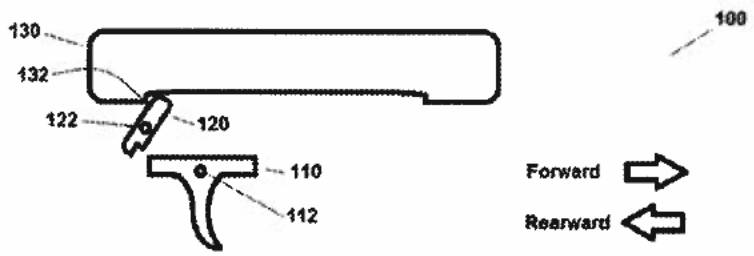


FIG. 1A

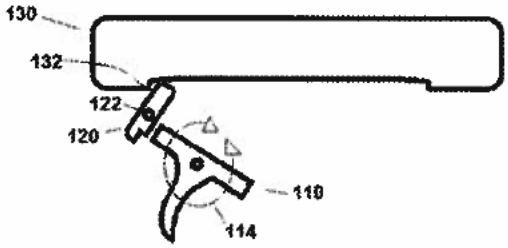


FIG. 1B

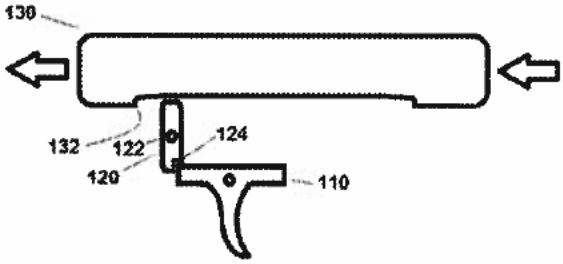


FIG. 1C

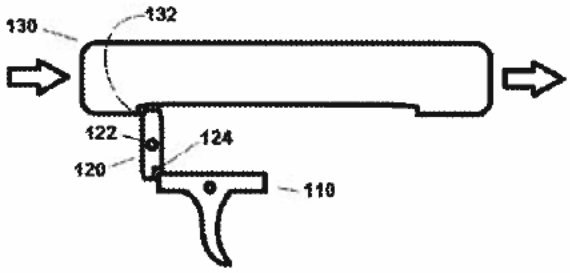


FIG. 1D

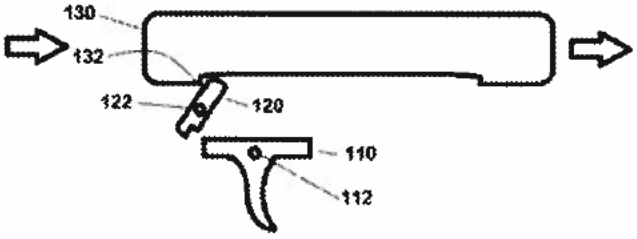


FIG. 1E

FIG. 2A

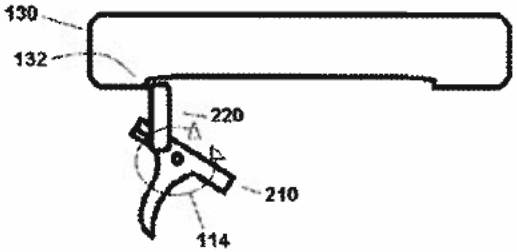


FIG. 2B

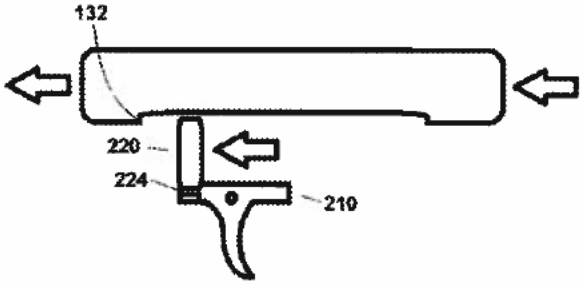


FIG. 2C

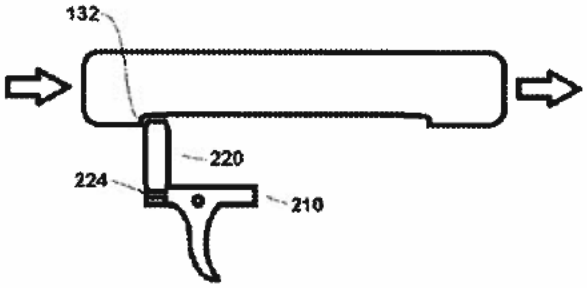


FIG. 2D

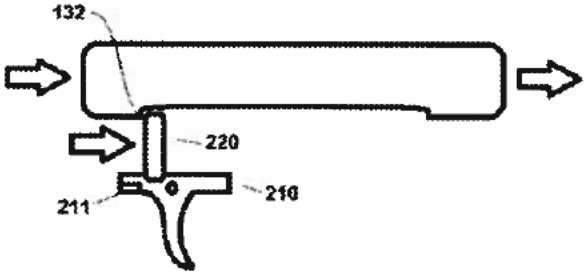


FIG. 2E

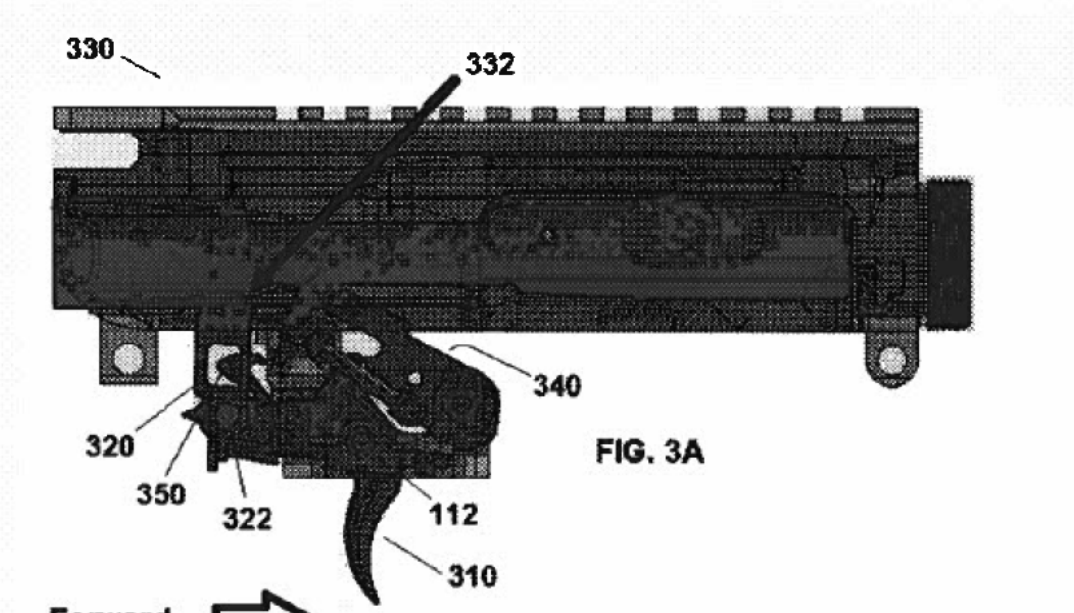

330
332
340
320
350
322
112
310

FIG. 3A

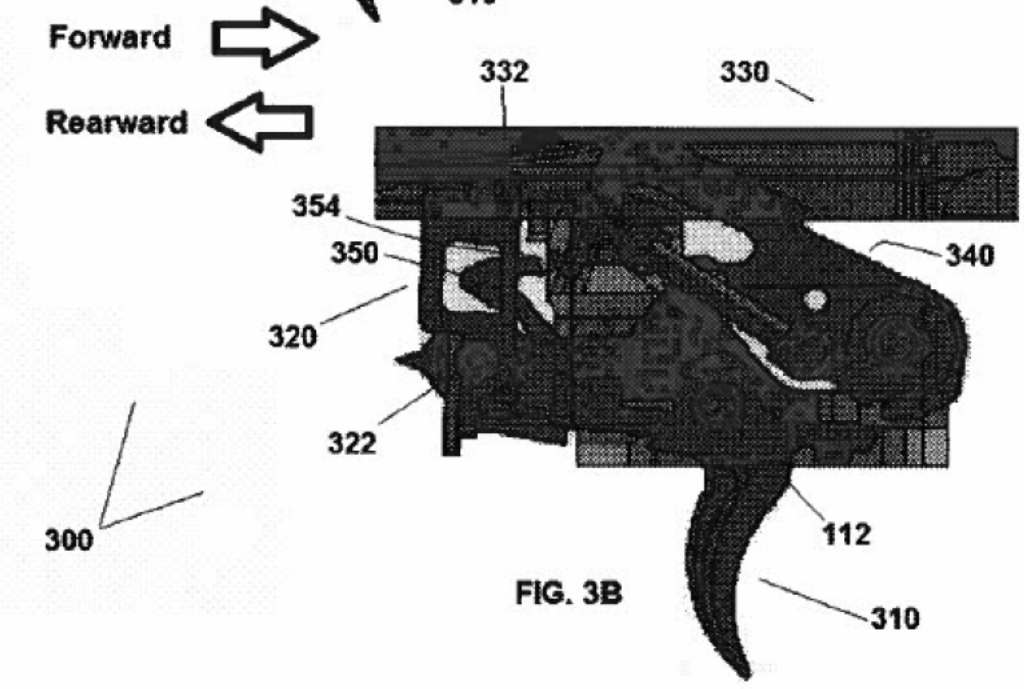

Forward
Rearward
332
330
354
350
340
320
322
300
112
310

FIG. 3B

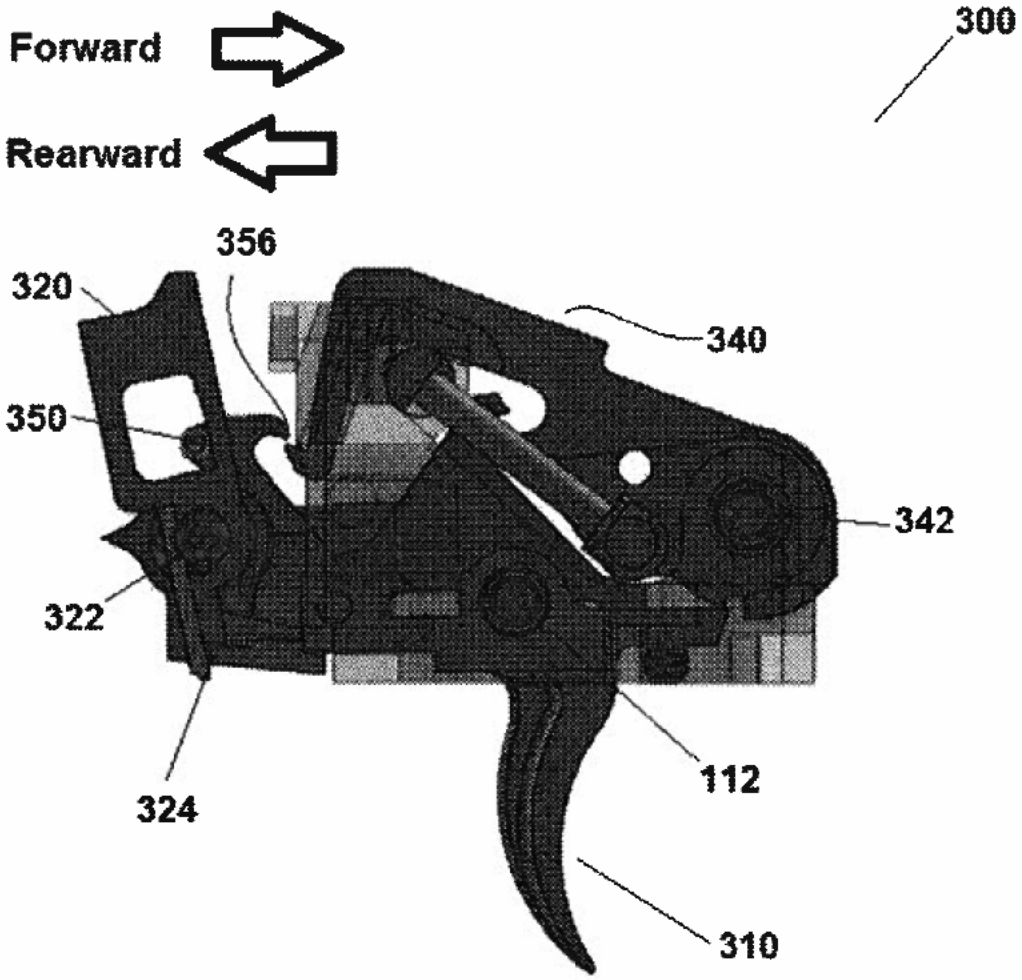


FIG. 4

TRIGGER-LOCKING APPARATUS, SYSTEM, AND METHOD FOR SEMIAUTOMATIC FIREARMS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority to, incorporates herein by reference, and is a non-provisional of U.S. provisional patent application No. 62/288,385 to David Foster, filed Jan. 28, 2016 and entitled Timing Apparatus, System, and Method for Dual Mode Trigger for Semiautomatic Firearms (herein "the '385 Application"). This application also claims priority to, incorporates herein by reference, and is a non-provisional of U.S. provisional patent application No. 62/311,807 to David Foster, filed Mar. 22, 2016 and entitled Trigger Having a Moveable Sear and Firearms Incorporating Same (herein "the '807 Application").

FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

None.

TECHNICAL FIELD

The present invention relates generally to firearms, and more particularly to improvements to trigger systems for semiautomatic firearms.

BACKGROUND

Selectable dual mode triggers for semiautomatic firearms are known, which include triggers capable of actuating and firing rounds on both pull and release of the trigger. Examples of such systems are disclosed in U.S. Pat. No. 8,667,881 B1 to Hawbaker, granted 2014-03-11 (herein "the '881 Patent"), and U.S. Pat. No. 8,820,211 B1 to Hawbaker, granted 2014-09-02 (herein "the '211 Patent") (collectively "the Hawbaker patents"), both of which are incorporated herein by reference. The characteristics of selecting modes of actuation in which only one round is discharged with one function of the trigger was approved by the ATF and granted the patents mentioned above and incorporated herein.

The introduction of a trigger that actuates on both pull and release presents several challenges. For example, during the testing of this new trigger, misfires were sometimes experienced due to light primer strikes, unexpected trigger states during actuation, and magazine changes. It quickly became apparent that improvements were needed to address these and related issues. In working to solve these problems, innovations were discovered that have applicability to not only pull-and-release triggers, but also to semiautomatic firearms generally.

SUMMARY

One of these innovations is a trigger-locking apparatus, system, and method for semiautomatic firearms, some examples of which are described herein. Illustrative examples of such trigger-locking apparatus were described in the '385 Application (as timing lever 7), and in the '807 Application (as timing lever 5), forming part of the pull-and-release triggers described therein. Such trigger-locking mechanisms can elegantly overcome certain problems of the prior art, such as hammer-follow leading to light primer strikes, and unexpected trigger states during actuation and magazine changes, while providing other advantages.

For example, provided in various example embodiments is a novel apparatus, system, and method for improved control of selectable dual mode trigger systems for semiautomatic firearms, which may include a timed locking mechanism incorporated in the trigger system that ensures that the carrier is seated before the hammer is actuated, and that the anti-hammer follow disconnect does not engage out of sequence. Such a mechanism ensures that the necessary steps occur in the proper sequence in the trigger mechanism, so that at any given time the trigger and firearm are ready for the next desired function to occur. The addition of a timing lever, or timed trigger lock mechanism, to the trigger as disclosed herein ensures that the sequence of events in the trigger is maintained in the proper relationship, preventing misfires and jams. Such trigger locking mechanisms have applicability beyond dual-mode trigger systems, however, and may be applied in various forms to semiautomatic firearms generally.

Accordingly, provided in various example embodiments is a trigger-locking apparatus for a semi-automatic firearm having a trigger and an action that cycles by loading, firing, and extracting cartridges when the firearm is repeatedly fired by movements of the trigger. In various example embodiments the trigger-locking apparatus may comprise a structure that when in a first position allows movement of the trigger between firing and non-firing positions, and when in a second position restricts movement of the trigger between firing and non-firing positions. The trigger-locking apparatus may be configured so that, when it is installed in the semi-automatic firearm, the structure is configured to automatically: be in the first position when the action of the firearm is in an in-battery position ready to fire a first cartridge; move to the second position when the firearm is firing the first cartridge and the action is being cycled; then return to the first position as the action of the firearm cycles back to the in-battery position ready to fire a second cartridge.

In various example embodiments the trigger-locking apparatus may be further configured so that, when it is installed in the semi-automatic firearm, the structure is configured to automatically move to the second position when the firearm is firing the second cartridge and the action is being cycled, then return to the first position as the action of the firearm cycles back to the in-battery position ready to fire a third cartridge. This sequence may be repeated for any suitable number of cartridges.

In various example embodiments the structure is biased toward the first position, for instance by a spring or any other suitable means. In various example embodiments the structure may be configured to move between the first and second positions by pivoting about an axis, while in other example embodiments the structure may be configured to move between the first and second positions by translating linearly.

In various example embodiments the action of the semi-automatic firearm may comprise a carrier assembly that is configured to translate longitudinally when the action is cycled, and the structure may be configured to be moved from the first position to the second position by longitudinal movement of the carrier assembly. In various example embodiments the carrier assembly may comprise a carrier, or a bolt, or any other suitable structure that engages and moves the structure from the first position to the second position when the carrier assembly translates longitudinally in a first direction when the action is cycled. Additionally or alternatively, in various example embodiments the structure

may be configured to be moved from the second position to the first position by or in cooperation with longitudinal movement of the carrier assembly. In various example embodiments the carrier assembly may comprise a carrier, or a bolt, or any other suitable structure that engages and moves or allows movement of the structure from the second position to the first position when the carrier assembly translates longitudinally in a second direction when the action is cycled.

In various example embodiments the action of the semi-automatic firearm may comprise a slide that is configured to translate longitudinally when the action is cycled, and the structure may be configured to be moved from the first position to the second position by longitudinal movement of the slide in a first direction. Additionally or alternatively, in various example embodiments the structure may be configured to be moved from the second position to the first position by or in cooperation with longitudinal movement of the slide. In various example embodiments the slide or a structure affixed therewith engages and moves or allows movement of the structure from the second position to the first position when the slide translates longitudinally in a second direction when the action is cycled.

In various example embodiments the trigger-locking apparatus may be configured for use with a semi-automatic firearm having a hammer that is releasably engaged by the trigger and by a secondary disconnector member, wherein the structure is further configured to release the secondary disconnector member from engagement with the trigger when the structure is moved from the first position to the second position. In various example embodiments such structure may be further configured to move the secondary disconnector member to an engagement position to engage with the trigger when the structure is moved from the second position to the first position. In various example embodiments the structure may be configured to move the secondary disconnector member from a position where it can engage the trigger to a position where it cannot engage the trigger when the structure is moved from the first position to the second position. In various example embodiments the structure may be configured to allow the secondary disconnector member to move from a position where it cannot engage the trigger to a position where it can engage the trigger when the structure is moved from the second position to the first position.

Also provided in various example embodiments are semi-automatic firearms incorporating any of the apparatus, features, or functions described herein.

Further provided in various example embodiments are methods of using the firearms, apparatus, features, or functions described herein. For example, provided in various example embodiments is a method of operating the semi-automatic firearms described herein, comprising the steps of moving the trigger and firing the first cartridge, causing the action to cycle and the structure to move from the first position into the second position thereby causing the trigger-locking apparatus to lock the trigger, and as the action of the firearm cycles back to the in-battery position ready to fire the second cartridge, causing the structure to move from the second position back to the first position thereby causing the trigger-locking apparatus to unlock the trigger.

In various example embodiments where the semi-automatic firearm further comprise a hammer that is releasably engaged by the trigger and by a secondary disconnector member, and wherein the structure is further configured to release the secondary disconnector member from engagement with the trigger when the structure is moved from the first position to the second position, and to move the secondary disconnector member to an engagement position to engage with the trigger when the structure is moved from the second position to the first position, the method may further comprise the steps of: causing the structure to release the secondary disconnector member from engagement with the trigger by causing the structure to move from the first position to the second position; and causing the structure to move the secondary disconnector member to an engagement position to engage with the trigger by causing, allowing, or cooperating with the structure to move the structure from the second position to the first position.

The foregoing summary is illustrative only and is not meant to be exhaustive or limiting. Other aspects, objects, and advantages of various example embodiments will be apparent to those of skill in the art upon reviewing the accompanying drawings, disclosure, and appended claims. These together with other objects of the invention, along with various features of novelty, which characterize the invention, are pointed out with particularity in the claims annexed hereto and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be had to the accompanying drawings, claims and descriptive matter in which there is illustrated a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. **1A-1E** illustrate a first example embodiment of a trigger-locking apparatus, system, and method for semiautomatic firearms that have an action that cycles by loading, firing, and extracting cartridges when the firearm is repeatedly fired by movements of the trigger, comprising a first example structure that when in an unlocked position shown in FIGS. **1A**, **1B**, **1E**, allows movement of the trigger between non-firing and firing positions as shown in FIGS. **1A** and **1B**, and when in a locked position shown in FIGS. **1C** and **1D**, restricts movement of the trigger between firing and non-firing positions.

FIG. **1A** shows the first example embodiment with a first example locking structure rotated to an unlocked position by a carrier assembly that is translated longitudinally forward when the action of the firearm is in an in-battery position ready to fire a cartridge.

FIG. **1B** depicts the example embodiment of FIG. **1A** with the trigger moving between non-firing and firing positions.

FIG. **1C** shows the example embodiment of FIG. **1B** with the trigger released and the locking structure rotated to a locked position after it has been released from the unlocked position by movement of the carrier assembly longitudinally rearward in the direction of the arrows, as when the action of the firearm is being cycled during the firing of a cartridge.

FIG. **1D** shows the example embodiment of FIG. **1C** with the carrier assembly returning longitudinally forward in the direction of the arrows and re-contacting the locking structure as the action of the firearm continues to cycle after the firing of a cartridge.

FIG. **1E** shows the embodiment of FIG. **1D** with the carrier assembly having fully returned longitudinally forward in the direction of the arrows and re-rotating the locking structure to the unlocked position of FIG. **1A** when the action of the firearm is in an in-battery position ready to fire a second cartridge.

FIGS. **2A-2E** illustrate a second example embodiment of a trigger-locking apparatus, system, and method for semi-automatic firearms that have an action that cycles by load-

ing, firing, and extracting cartridges when the firearm is repeatedly fired by movements of the trigger, comprising a second example structure that when in an unlocked position shown in FIGS. 2A, 2B, 2E, allows movement of the trigger between non-firing and firing positions as shown in FIGS. 2A and 2B, and when in a locked position shown in FIGS. 2C and 2D, restricts movement of the trigger between firing and non-firing positions.

FIG. 2A shows the second example embodiment with a second example locking structure translated to an unlocked position by a carrier assembly that is translated longitudinally forward when the action of the firearm is in an in-battery position ready to fire a cartridge.

FIG. 2B depicts the example embodiment of FIG. 2A with the trigger moving between non-firing and firing positions.

FIG. 2C shows the example embodiment of FIG. 2B with the trigger released and the locking structure translated to a locked position after it has been released from the unlocked position by movement of the carrier assembly longitudinally rearward in the direction of the arrows, as when the action of the firearm is being cycled during the firing of a cartridge.

FIG. 2D shows the example embodiment of FIG. 2C with the carrier assembly returning longitudinally forward in the direction of the arrows and re-contacting the locking structure as the action of the firearm continues to cycle after the firing of a cartridge.

FIG. 2E shows the embodiment of FIG. 2D with the carrier assembly having fully returned longitudinally forward in the direction of the arrows and re-translating the locking structure to the unlocked position of FIG. 2A when the action of the firearm is in an in-battery position ready to fire a second cartridge.

FIGS. 3A, 3B, and 4 illustrate a third example embodiment of a trigger-locking apparatus, system, and method for semiautomatic firearms that have an action that cycles by loading, firing, and extracting cartridges when the firearm is repeatedly fired by movements of the trigger, comprising a third example structure that when in an unlocked position shown in FIGS. 3A, 3B, allows movement of the trigger between non-firing and firing positions, and when in a locked position shown in FIG. 4, restricts movement of the trigger between firing and non-firing positions. The third example embodiment includes a hammer that is releasably engaged by the trigger and by a secondary disconnector member.

FIG. 3A shows the third example embodiment with the third example locking structure rotated to an unlocked position by a carrier assembly that is translated longitudinally forward when the action of the firearm is in an in-battery position ready to fire a cartridge. In this unlocked position, the third example locking structure has allowed the secondary disconnector member to move to an engagement position to engage with the trigger.

FIG. 3B is a closer view of a portion of FIG. 3A.

FIG. 4 shows the third example embodiment with the third example locking structure rotated to locked position as when the carrier assembly of FIG. 3A (not shown in FIG. 4) is translated longitudinally rearward as when the action of the firearm is being cycled during the firing of a cartridge. In this locked position, the third example locking structure has moved the secondary disconnector member to a position where it will not engage with the trigger.

DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS

Reference will now be made in detail to some specific example embodiments, including any best mode contemplated by the inventor. Examples of these specific embodiments are illustrated in the accompanying drawings. While the invention is described in conjunction with these specific embodiments, it will be understood that it is not intended to limit the invention to the described or illustrated embodiments. On the contrary, it is intended to cover alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. Particular example embodiments may be implemented without some or all of these features or specific details. In other instances, components and procedures well known to persons of skill in the art have not been described in detail in order not to obscure inventive aspects.

Various techniques and mechanisms will sometimes be described in singular form for clarity. However, it should be noted that some embodiments may include multiple iterations of a technique or multiple components, mechanisms, and the like, unless noted otherwise. Similarly, various steps of the methods shown and described herein are not necessarily performed in the order indicated, or performed at all in certain embodiments. Accordingly, some implementations of the methods discussed herein may include more or fewer steps than those shown or described.

Further, the example techniques and mechanisms described herein will sometimes describe a connection, relationship or communication between two or more items or entities. It should be noted that a connection or relationship between entities does not necessarily mean a direct, unimpeded connection, as a variety of other entities or processes may reside or occur between any two entities. Consequently, an indicated connection does not necessarily mean a direct, unimpeded connection unless otherwise noted.

To ensure clarity, an explanation of the term "in-battery" will now be provided. "In-battery" refers to the status of a firearm once the action has returned to the normal firing position. Out-of-battery refers to the status of a firearm before the action has returned to the normal firing position. According to the website Wikipedia, the term originates from artillery, referring to a gun that fires before it has been pulled back. In artillery guns, "out of battery" usually refers to a situation where the recoiling mass (breech and barrel) has not returned to its proper position after firing because of a failure in the recoil mechanism. Gun carriages should normally be designed to prevent this in typical circumstances. But if a gun is fired out of battery, then damage to the carriage can occur, as the effectiveness of the recoil mechanism will have been compromised. In firearms and artillery where there is an automatic loading mechanism, a condition can occur in which a live round is at least partially in the firing chamber and capable of being fired, but is not properly secured by the usual mechanism of that particular weapon (and thus is not "in battery"). The gas pressure produced at the moment of firing can rupture the not-fully-supported cartridge case and can result in flame and high-pressure gas being vented at the breech of the weapon, potentially creating flying shrapnel and possibly injuring the operator. Depending on the design, it is also possible for a semi-automatic firearm to simply not fire upon pulling the trigger when in an out-of-battery state. The present locking mechanisms **100**, **200**, **300** and the like are designed to prevent pulling the trigger **110** when the firearm is in an out-of-battery state, which can sometimes happen in most if

not all semi-automatic firearms, but is a special risk in those firearms capable of firing upon both the pull and the release of the trigger **110**.

Referring now to the drawings in detail to the drawings wherein like elements are indicated by like numerals, there are shown various aspects of example trigger-locking apparatus, system, and method for semiautomatic firearms. FIGS. **1A-1E** illustrate a first example embodiment of certain portions of a trigger-locking apparatus, system, and method **100** for semiautomatic firearms. While not reproduced in the present figures for the sake of visual clarity, it is well known that semiautomatic firearms typically have a mechanism commonly known as an action that cycles by loading, firing, and extracting cartridges when the firearm is repeatedly fired by movements of the trigger. Here, the system **100** may comprise a trigger **110**, which may pivot about an axis **112** between firing and non-firing positions (indicated by arrow **114**), or may alternatively move laterally or may be actuated in any other suitable manner (not shown).

The system **100** may comprise a structure **120** that when in an unlocked position shown in FIGS. **1A**, **1B**, **1E**, allows movement **114** of the trigger **110** between non-firing and firing positions as shown in FIGS. **1A** and **1B**. Turning to FIG. **1A**, shown is a first example embodiment **100** with a first example locking structure **120** rotated about an axis **122** to an unlocked position by a carrier assembly **130** that is translated longitudinally forward (as indicated by the Forward arrow on the figures) when the action of the firearm is in an in-battery position ready to fire a cartridge (not shown). More specifically, in the example embodiment **100**, an engagement feature **132** may be provided on or as part of carrier assembly **130** that when longitudinally translated forward and adjacent the structure **120**, mechanically engages an upper portion of the structure **120** (that portion above the axis **122**) and pushes it forward, thus causing the structure **120** to pivotally rotate about axis **122** in a clockwise direction as shown in FIGS. **1A** and **1B**, until the trigger **110** can rotate about its axis **112** sufficiently to fire a cartridge without the structure **120** interfering with the movement **114** of the trigger **110**. This is the unlocked position.

The carrier assembly **130** may comprise any suitable components and features, such as a carrier, bolt assembly, bolt, and the like, as is known in the art of semi-automatic rifles, for instance. Alternatively, carrier assembly **130** may comprise a slide, for instance as is known in the art of semi-automatic pistols. Engagement feature **132** may comprise or be formed onto, into, or as part of any portion of the carrier assembly **130**, and may comprise an abutment, a groove, or a convex or concave surface, or any other mechanical structure that will suitably function to mechanically engage the locking structure **120**.

A spring or other biasing means (not shown) may be provided to rotationally urge the structure **120** in a counter-clockwise direction about the axis **122**. For example and not by way of limitation, a torsional spring may be affixed against the structure **120** and around axis **122**, or a helical compression spring may be provided pushing the upper portion of the structure **120** (that portion above the axis **122**) in the rearward direction, or a helical compression spring may be provided pushing the lower portion of the structure **120** (that portion below the axis **122**) in the forward direction, for example.

Once the trigger **110** is actuated by movement **114** between firing and non-firing positions and a cartridge is fired, the action of the firearm begins to cycle causing the carrier assembly **130** to move rearward as depicted in FIG. **1C**. This moves the engagement feature **132** away from the locking structure **120**, allowing the spring or other urging means discussed above but not shown to cause the locking structure **120** to automatically rotate counter-clockwise around axis **122**, such that when the trigger **110** is moved **114** between firing and non-firing positions, for instance when it is released, the locking structure **120** automatically engages the trigger **110** at a locking interface **124** and locks the trigger **110** in position as shown in FIGS. **1C** and **1D**, thereby restricting movement **114** of the trigger **110** between firing and non-firing positions while the action of the firearm is out-of-battery.

FIG. **1D** shows the example embodiment **100** discussed above with respect to FIG. **1C** with the carrier assembly **130** returning longitudinally forward in the direction of the arrows and the engagement feature **132** of the carrier assembly **130** re-contacting the locking structure **120** as the action of the firearm continues to cycle after the firing of a cartridge.

FIG. **1E** shows the example embodiment **100** discussed above with respect to FIG. **1D** with the carrier assembly **130** having fully returned longitudinally forward in the direction of the arrows when the action of the firearm is in an in-battery position ready to fire a second cartridge. The engagement feature **132** of the carrier assembly **130** has pushed forward the upper portion of the locking structure **120**, causing the locking structure **120** to rotate clockwise against whatever spring forces may be urging the locking structure in the counter-clockwise direction, and the firearm and its components are in the same positions and states as they were at the beginning of the process as shown and described with respect to FIG. **1A**, namely with the trigger **110** automatically unlocked and free to move **114** as shown in FIG. **1B** once the action of the firearm returns to in-battery position. This sequence can be repeated any number of times with any number of cartridges.

FIGS. **2A-2E** illustrate a second example embodiment of a trigger-locking apparatus, system, and method **200** for semiautomatic firearms that have an action that cycles by loading, firing, and extracting cartridges when the firearm is repeatedly fired by movements of the trigger. System **200** may comprise a trigger **210**, which may pivot about an axis **112** between firing and non-firing positions (indicated by arrow **114**), or may alternatively move laterally or may be actuated in any other suitable manner (not shown).

The system **200** may comprise a structure **220** that when in an unlocked position shown in FIGS. **2A**, **2B**, **2E**, allows movement **114** of the trigger **210** between non-firing and firing positions as shown in FIGS. **2A** and **2B**. Turning to FIG. **2A**, shown is a second example embodiment **200** with a second example locking structure **220** that translates linearly in a forward direction (as indicated by the Forward arrow on the figures), to an unlocked position by a carrier assembly **130** that is also translated longitudinally forward when the action of the firearm is in an in-battery position ready to fire a cartridge (not shown). More specifically, in the example embodiment **200**, an engagement feature **132** may be provided on or as part of carrier assembly **130** that when longitudinally translated forward and adjacent the structure **220**, mechanically engages an upper portion **221** of the structure **220** and pushes the whole structure **220** to a forward position as shown in FIGS. **2A** and **2B** (for instance in a channel or other guiding structure, not shown), until the trigger **210** can rotate about its axis **112** sufficiently to fire a cartridge without the structure **220** interfering with the movement **114** of the trigger **210**. This is the unlocked position.

The carrier assembly **130** may comprise any suitable components and features as described herein with respect to the first embodiment **100**, and will suitably function to mechanically engage the locking structure **220** as described herein.

A spring or other biasing means (not shown) may be provided to urge the structure **220** in a rearward direction (as indicated by the Rearward arrow on the figures). For example and not by way of limitation, a helical compression spring may be provided pushing the structure **220** in the rearward direction, for example.

Once the trigger **210** is actuated by movement **114** between firing and non-firing positions and a cartridge is fired, the action of the firearm begins to cycle causing the carrier assembly **130** to move rearward as depicted in FIG. **2**C. This moves the engagement feature **132** away from the locking structure **220**, allowing the spring or other urging means discussed above but not shown to cause the locking structure **220** to automatically translate linearly in the rearward direction, such that when the trigger **210** is moved **114** between firing and non-firing positions, for instance when it is released, a lower portion **222** of the locking structure **220** automatically engages an engagement feature **211** of the trigger **210** at a locking interface **224** and locks the trigger **210** in position as shown in FIGS. **2**C and **2**D, thereby restricting movement **114** of the trigger **210** between firing and non-firing positions while the action of the firearm is out-of-battery.

FIG. **2**D shows the example embodiment **200** discussed above with respect to FIG. **2**C with the carrier assembly **130** returning longitudinally forward in the direction of the arrows and the engagement feature **132** of the carrier assembly **130** re-contacting the locking structure **220** as the action of the firearm continues to cycle after the firing of a cartridge.

FIG. **2**E shows the example embodiment **200** discussed above with respect to FIG. **2**D with the carrier assembly **130** having fully returned longitudinally forward in the direction of the arrows when the action of the firearm is in an in-battery position ready to fire a second cartridge. The engagement feature **132** of the carrier assembly **130** has pushed forward the locking structure **220**, causing the locking structure **220** to move linearly forwards against whatever spring forces may be urging the locking structure **220** in the rearward direction, and the firearm and its components are in the same positions and states as they were at the beginning of the process as shown and described with respect to FIG. **2**A, namely with the trigger **210** automatically unlocked and free to move **114** as shown in FIG. **2**B once the action of the firearm returns to in-battery position. This sequence can be repeated any number of times with any number of cartridges.

FIGS. **3**A, **3**B, and **4** illustrate a third example embodiment **300** of a trigger-locking apparatus, system, and method for semiautomatic firearms that have an action that cycles by loading, firing, and extracting cartridges when the firearm is repeatedly fired by movements of the trigger **310**. This example embodiment **300** illustrates certain components of a trigger assembly that is capable of firing on both pull-and-release, and comprises a third example locking structure **320** that when in an unlocked position shown in FIGS. **3**A, **3**B, allows movement of the trigger **310** between non-firing and firing positions, and when in a locked position shown in FIG. **4**, restricts movement of the trigger **310** between firing and non-firing positions. The third example embodiment **300** includes a hammer **340** that is releasably engaged by the trigger **310** and by a secondary disconnector member **350**.

FIGS. **3**A and **3**B show the third example embodiment **300** with the third example locking structure **320** rotated about an axis **322** to an unlocked position by a carrier assembly **330** that is translated longitudinally forward (as shown by the arrow labeled Forward in the figures) when the action of the firearm is in an in-battery position ready to fire a cartridge. More specifically, an engagement feature **332** on the carrier assembly **330** is in a forward position having pushed forward a top portion of the locking structure **320**, causing the locking structure **320** to rotate clockwise about its pivotal axis **322**. In this unlocked position, the third example locking structure **320** clears the trigger **310**, so that the trigger **310** may be actuated and rotated about its pivotal axis **112**. Also in this unlocked position, the third example locking structure **320** is not engaging the secondary disconnector member **350** and has allowed the secondary disconnector member **350** to move to an engagement position **354** where it can engage with a corresponding hook on the hammer **340** when the hammer **340** is rotated further counterclockwise (for instance as shown in FIG. **4**).

FIG. **4** shows the third example embodiment **300** with the third example locking structure **320** rotated counterclockwise about its axis **322** to a locked position, as when the carrier assembly **330** of FIG. **3**A (not shown in FIG. **4**) is translated longitudinally rearward, for instance when the action of the firearm is being cycled during the firing of a cartridge. More specifically, in FIG. **4** an engagement feature **332** on the carrier assembly **330** would now be in a rearward position, like carrier assembly **130** in FIG. **1**C, and would no longer be pushing forward on a top portion of the locking structure **320**, thereby allowing the locking structure **320** to automatically rotate counter-clockwise about its pivotal axis **322** (under the rotational force of an urging mechanism like a spring as discussed with regarding to embodiment **100**). In this locked position, the third example locking structure **320** forms a locking interface **324** with the trigger assembly **310**, so that the trigger **310** may not be actuated and rotated about its pivotal axis **112**, thereby locking the trigger **310** when the action of the firearm is out-of-battery. Also in this locked position, the third example locking structure **320** engages the secondary disconnector member **350** and pulls it rearward to a disengagement position **356** where it will not engage with the corresponding hook on the hammer **340**. This ensures that the secondary disconnector member **350**, also sometimes referred to as an anti-hammer-follow disconnect, does not engage out of sequence.

As the action of the firearm returns to battery and the carrier assembly **330** moves back to its forward position, the above embodiment **300** will return to the state shown in FIG. **3**A, with the trigger **310** unlocked and the secondary disconnector **350** back in position **354** to engage the hammer **340**. This sequence can be repeated any number of times with any number of cartridges.

It is understood that the above-described embodiments are merely illustrative of the application. Other embodiments may be readily devised by those skilled in the art, which may embody one or more aspects or principles of the invention and fall within the scope of the claims. For example, it is contemplated that the present principles could be employed with many other locking mechanisms other than those disclosed as locking structures **120**, **220**, **320**, such as plunger designs, rotating cams, gears, or ratchets, or any other suitable structure that achieves the present purposes. Any suitable materials and manufacturing methods may be used as would be apparent to persons of skill in the art.

What is claimed is:

1. A trigger-locking apparatus for a semi-automatic firearm having a trigger and an action that cycles by a carrier assembly element translating longitudinally and the action loading, firing, and extracting cartridges when the firearm is repeatedly fired by movements of the trigger, the trigger-locking apparatus comprising:

a structure that when in a first position allows movement of the trigger between firing and non-firing positions, and when in a second position restricts movement of the trigger between firing and non-firing positions;

the trigger-locking apparatus configured so that, when it is installed in the semi-automatic firearm, the structure is configured to:

be held in the first position by contact with the carrier assembly element when the action of the firearm is in an in-battery position ready to fire a first cartridge;

be released from contact with the carrier assembly element and, only upon release of the trigger, move to the second position when the firearm is firing the first cartridge and the action is being cycled; then

be returned to the first position by contact with the carrier assembly element as the action of the firearm cycles back to the in-battery position ready to fire a second cartridge.

2. The trigger-locking apparatus of claim 1, wherein the trigger-locking apparatus is further configured so that, when it is installed in the semi-automatic firearm, the structure is configured to:

be released from contact with the carrier assembly element and, only upon release of the trigger, move to the second position when the firearm is firing the second cartridge and the action is being cycled; then

be returned to the first position by contact with the carrier assembly element as the action of the firearm cycles back to the in-battery position ready to fire a third cartridge.

3. The trigger-locking apparatus of claim 1, wherein the structure is biased toward the second position by a spring.

4. The trigger-locking apparatus of claim 1, wherein the structure is configured to move between the first and second positions by pivoting about an axis.

5. The trigger-locking apparatus of claim 1, wherein the structure is configured to move between the first and second positions by translating linearly.

6. The trigger-locking apparatus of claim 1, wherein the carrier assembly element comprises any of a carrier or a bolt that engages and moves the structure from the first position to the second position when the carrier assembly element translates longitudinally when the action is cycled.

7. The trigger-locking apparatus of claim 1, wherein the action of the semi automatic firearm carrier assembly element comprises a slide that is configured to translate longitudinally when the action is cycled, and the structure is configured to be moved from the first position to the second position by longitudinal movement of the slide.

8. The trigger-locking apparatus of claim 1, for a semi-automatic firearm having a hammer that is releasably engaged by the trigger and by a secondary disconnector member, wherein the structure is further configured to move the secondary disconnector member from a position where it can engage the trigger to a position where it cannot engage the trigger when the structure is moved from the first position to the second position.

9. The trigger-locking apparatus of claim 8, wherein the structure is further configured to allow the secondary disconnector member to move from a position where it cannot engage the trigger to a position where it can engage the trigger when the structure is moved from the second position to the first position.

10. A semi-automatic firearm having a trigger, a trigger-locking apparatus, and an action that cycles by a carrier assembly element translating longitudinally and the action loading, firing, and extracting cartridges when the firearm is repeatedly fired by movements of the trigger, the trigger-locking apparatus comprising:

a structure that when in a first position allows movement of the trigger between firing and non-firing positions, and when in a second position restricts movement of the trigger between firing and non-firing positions;

the trigger-locking apparatus configured so that, when it is installed in the semi-automatic firearm, the structure is configured to:

be held in the first position by contact with the carrier assembly element when the action of the firearm is in an in-battery position ready to fire a first cartridge;

be released from contact with the carrier assembly element and, only upon release of the trigger, move to the second position when the firearm is firing the first cartridge and the action is being cycled; then

be returned to the first position by contact with the carrier assembly element as the action of the firearm cycles back to the in-battery position ready to fire a second cartridge.

11. The semi-automatic firearm of claim 10, wherein the structure is further configured to:

be released from contact with the carrier assembly element and, only upon release of the trigger, move to the second position when the firearm is firing the second cartridge and the action is being cycled; then

be returned to the first position by contact with the carrier assembly element as the action of the firearm cycles back to the in-battery position ready to fire a third cartridge.

12. The semi-automatic firearm of claim 10, wherein the structure is biased toward the second position by a spring.

13. The semi-automatic firearm of claim 10, wherein the structure is configured to move between the first and second positions by pivoting about an axis.

14. The semi-automatic firearm of claim 10, wherein the carrier assembly element comprises a slide that is configured to translate longitudinally when the action is cycled, and the structure is configured to be moved from the first position to the second position by longitudinal movement of the slide.

15. The semi-automatic firearm of claim 10, further comprising a hammer that is releasably engaged by the trigger and by a secondary disconnector member, wherein the structure is further configured to move the secondary disconnector member from a position where it can engage the trigger to a position where it cannot engage the trigger when the structure is moved from the first position to the second position.

16. The semi-automatic firearm of claim 15, wherein the structure is further configured to allow the secondary disconnector member to move from a position where it cannot engage the trigger to a position where it can engage the trigger when the structure is moved from the second position to the first position.

17. A method of operating a semi-automatic firearm, comprising the steps of:

providing the semi-automatic firearm of claim 10;

moving the trigger and firing the first cartridge and then releasing the trigger, thereby causing the action to cycle and the structure to move from the first position into the

second position thereby causing the trigger-locking apparatus to lock the trigger, and as the action of the firearm cycles back to the in-battery position ready to fire the second cartridge, causing the structure to move from the second position back to the first position thereby causing the trigger-locking apparatus to unlock the trigger.

18. The method of claim 17, wherein the semi-automatic firearm further comprises a hammer that is releasably engaged by the trigger and by a secondary disconnector member, and wherein the structure is further configured to release the secondary disconnector member from engagement with the trigger when the structure is moved from the first position to the second position, and to move the secondary disconnector member to an engagement position to engage with the trigger when the structure is moved from the second position to the first position, the method further comprising the steps of:

causing the structure to release the secondary disconnector member from engagement with the trigger by causing the structure to move from the first position to the second position; and

causing the structure to move the secondary disconnector member to an engagement position to engage with the trigger by causing the structure to move from the second position to the first position.

* * * * *

US010514223B1

(12) **United States Patent**
Rounds

(10) **Patent No.: US 10,514,223 B1**
(45) **Date of Patent: Dec. 24, 2019**

(54) **FIREARM TRIGGER MECHANISM**

(71) Applicant: **Wolf Tactical LLC**, Buda, TX (US)

(72) Inventor: **Jeffrey Cooper Rounds**, Buda, TX (US)

(73) Assignee: **Wolf Tactical LLC**, Buda, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **16/143,624**

(22) Filed: **Sep. 27, 2018**

Related U.S. Application Data

(60) Provisional application No. 62/565,247, filed on Sep. 29, 2017.

(51) **Int. Cl.**

F41A 19/43	(2006.01)
F41A 19/14	(2006.01)
F41A 19/10	(2006.01)
F41A 19/12	(2006.01)
F41A 17/82	(2006.01)

(52) **U.S. Cl.**
CPC ***F41A 19/43*** (2013.01); ***F41A 19/10*** (2013.01); ***F41A 19/12*** (2013.01); ***F41A 19/14*** (2013.01); *F41A 17/82* (2013.01)

(58) **Field of Classification Search**
CPC F41A 19/10; F41A 19/12; F41A 19/14; F41A 19/43; F41A 17/82
USPC 89/136, 139; 42/69.01, 69.02, 69.03
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,704,153	A *	1/1998	Kaminski	F41A 17/063 42/117
6,101,918	A	8/2000	Akins	
6,722,072	B1	4/2004	McCormick	
7,162,824	B1	1/2007	McCormick	
7,213,359	B2	5/2007	Beretta	
7,293,385	B2	11/2007	McCormick	
7,398,723	B1	7/2008	Blakley	

(Continued)

FOREIGN PATENT DOCUMENTS

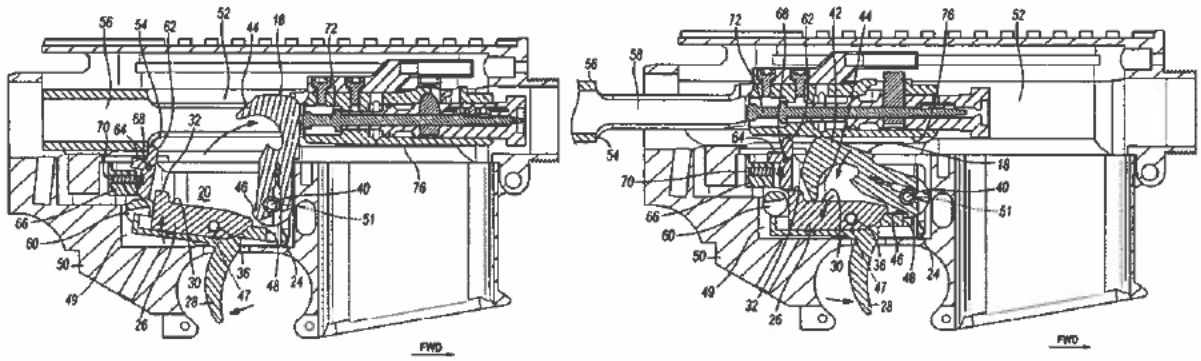
TW	409847	U	10/2000

Primary Examiner — Bret Hayes
(74) *Attorney, Agent, or Firm* — Wood Herron & Evans LLP

(57) **ABSTRACT**

A trigger mechanism for use in a firearm having a receiver with a fire control mechanism pocket, transversely aligned pairs of hammer and trigger pin openings in the pocket, and a bolt carrier that reciprocates and pivotally displaces a hammer when cycled. The trigger mechanism includes a hammer, a trigger member, and a locking bar. The hammer has a sear notch and is mounted in the fire control mechanism pocket to pivot on a transverse hammer pin between set and released positions. The trigger member has a sear and is mounted in the fire control mechanism pocket to pivot on a transverse trigger pin between set and released positions. The trigger member has a surface positioned to be contacted by hammer when the hammer is displaced by cycling of the bolt carrier, the contact causing the trigger member to be forced to the set position. The locking bar is pivotally mounted in a frame and spring biased toward a first position in which it mechanically blocks the trigger member from moving to the release position, and is movable against the spring bias to a second position when contacted by the bolt carrier reaching a substantially in-battery position, allowing the trigger member to be moved by an external force to the released position.

7 Claims, 4 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

8,127,658	B1	3/2012	Cottle	
8,820,211	B1	9/2014	Hawbaker	
9,021,732	B2	5/2015	Johnson	
9,513,076	B2 *	12/2016	Kolev	F41A 3/12
9,568,264	B2	2/2017	Graves	
9,816,772	B2	11/2017	Graves	
9,939,221	B2	4/2018	Graves	
2007/0199435	A1 *	8/2007	Hochstrate	F41A 3/66 89/191.02
2016/0010933	A1	1/2016	Bonner	
2016/0102933	A1	4/2016	Graves	
2017/0219307	A1 *	8/2017	Foster	F41A 19/06
2018/0066911	A1	3/2018	Graves	
2018/0087860	A1 *	3/2018	Sullivan	F41A 17/46

* cited by examiner

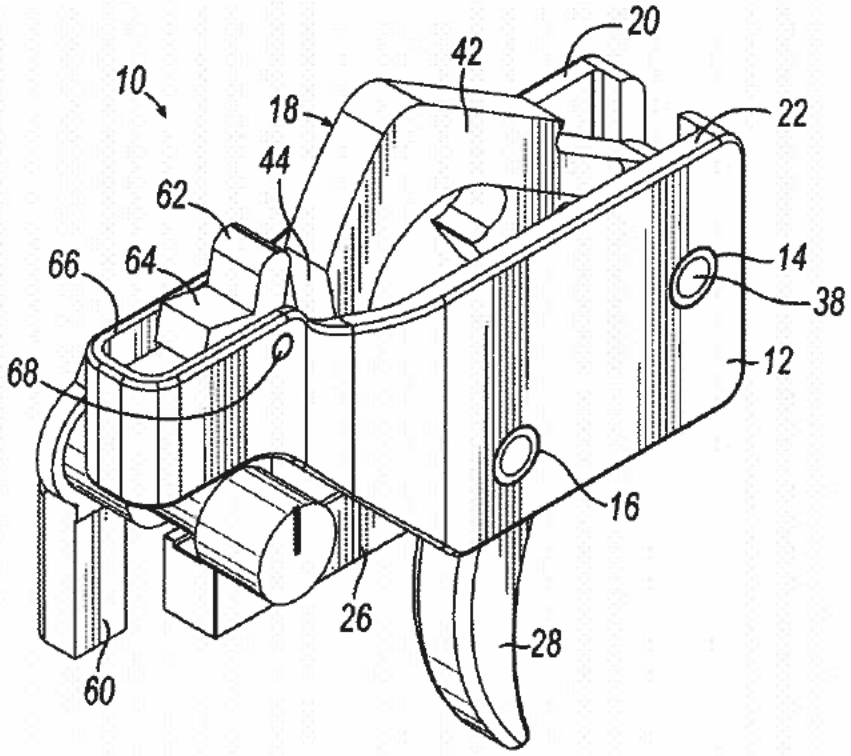

20
42
10
18
22
44
62
14
66
64
38
68
12
16
26
28
60

FIG. 1

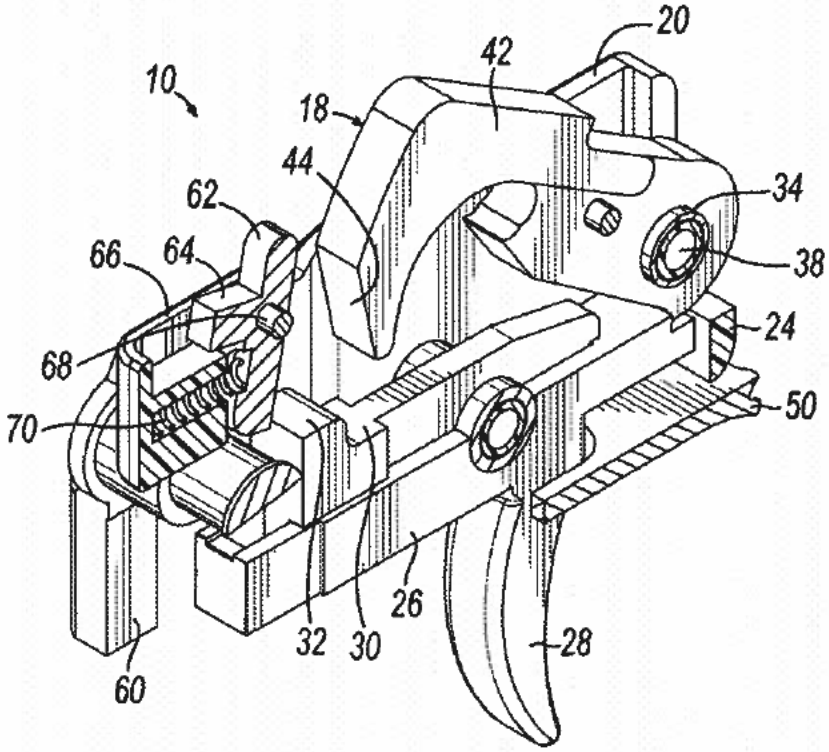

20
42
10
18
44
34
62
38
66
64
24
68
50
70
26
32
30
28
60

FIG. 2

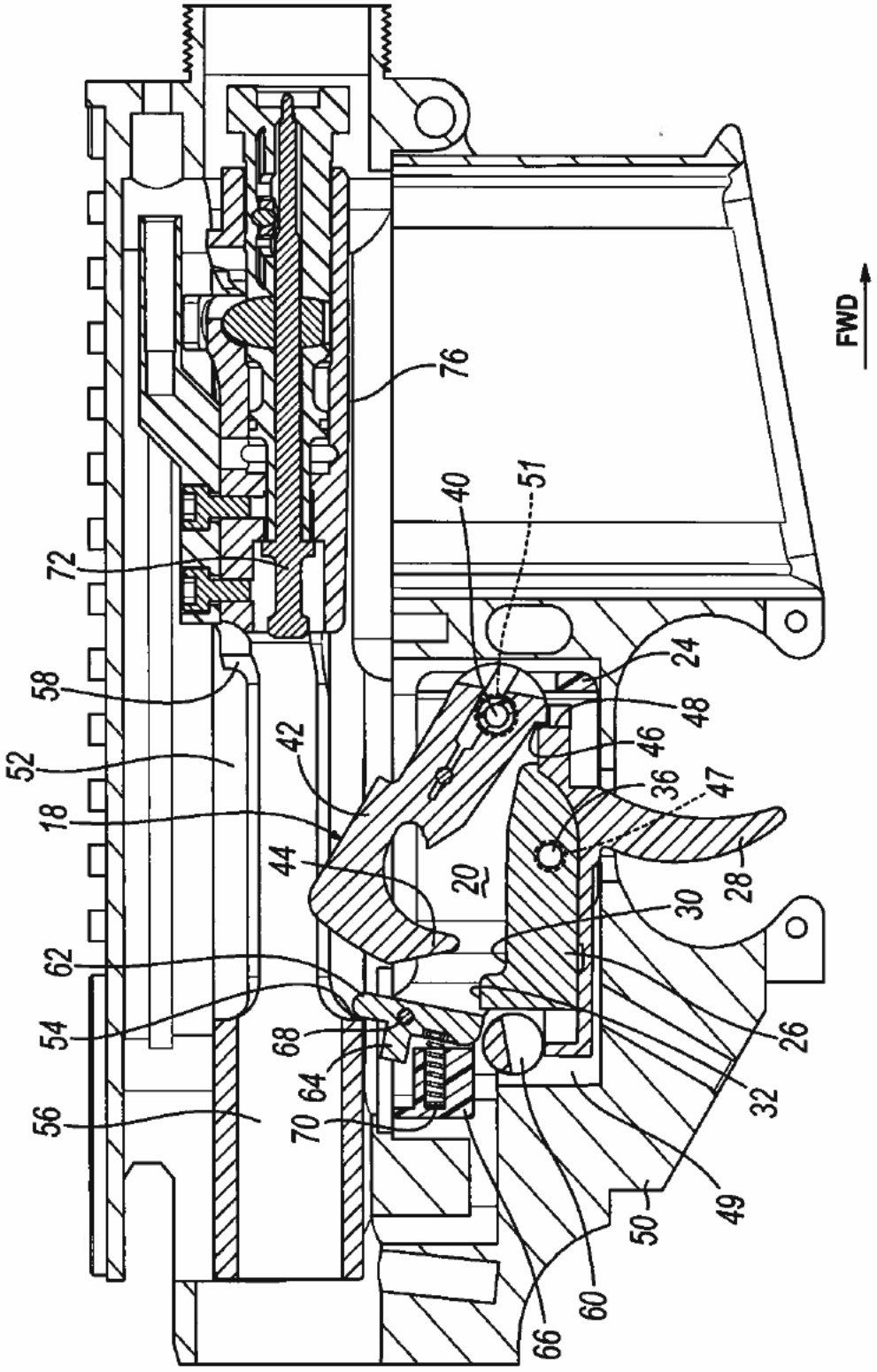

FWD
76
40
51
72
58
52
18
42
44
20
24
48
46
36
47
28
30
62
54
56
68
64
70
26
32
49
50
60
66

FIG. 3

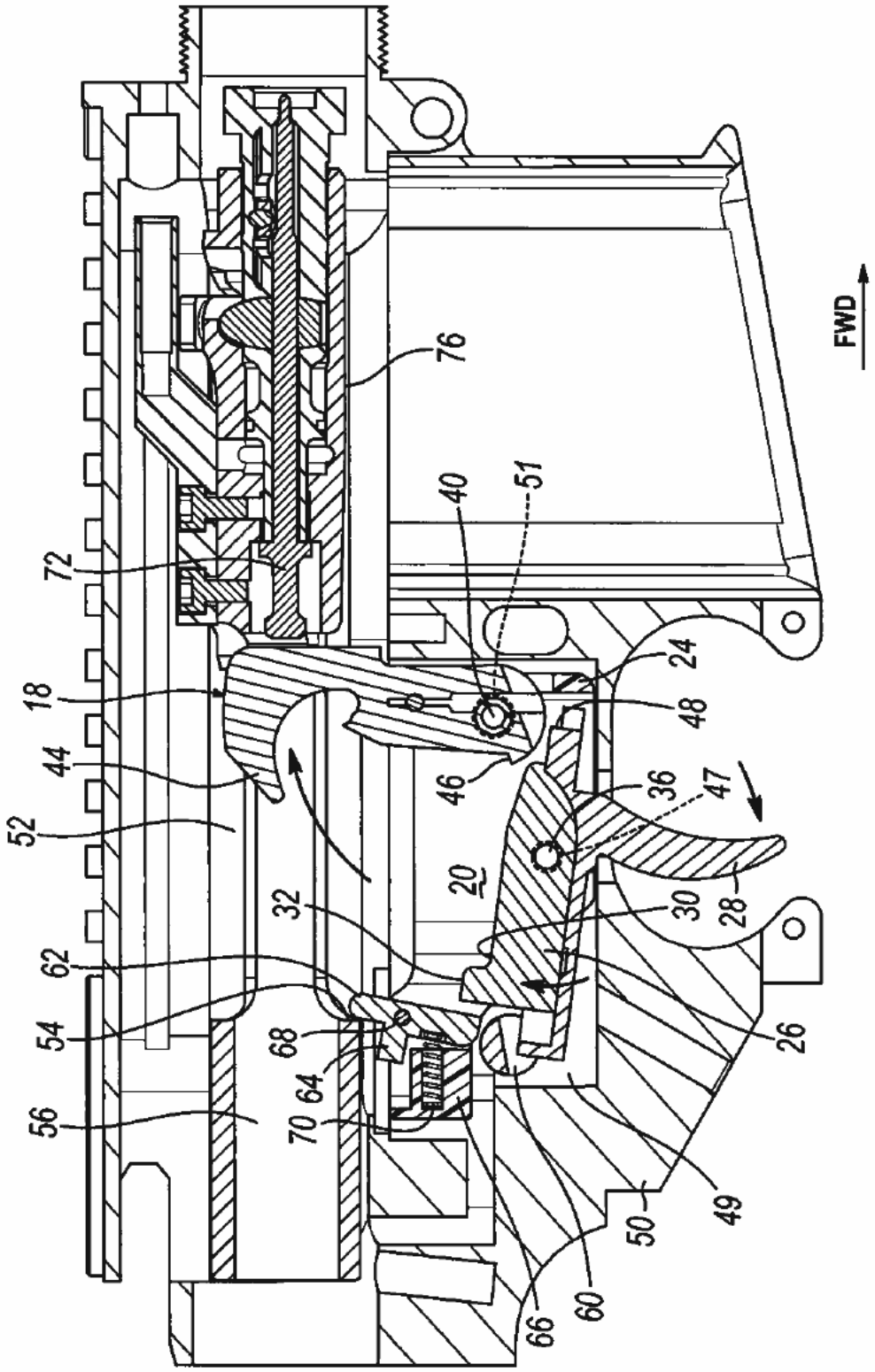

FWD
76
40
51
72
18
44
52
24
48
46
36
47
20
32
30
28
62
54
68
64
70
56
26
49
50
60
66

FIG. 4

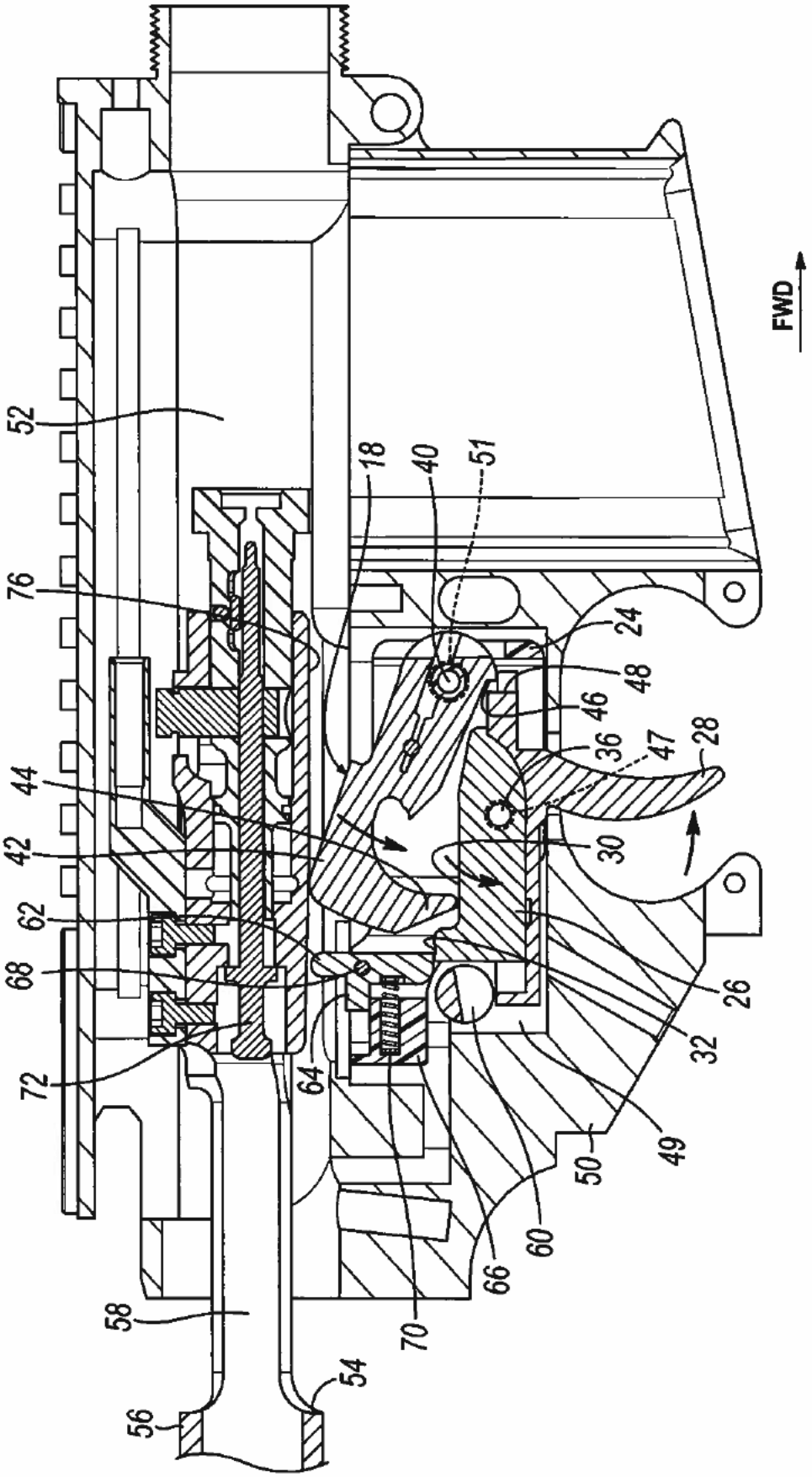

FWD
52
18
40
51
76
24
48
46
36
47
28
44
42
30
62
68
26
32
72
64
49
50
60
66
58
70
54
56

FIG. 5

FIREARM TRIGGER MECHANISM

RELATED APPLICATIONS

This application claims priority to U.S. Provisional Patent Application No. 62/565,247 filed Sep. 29, 2017, and incorporates the same herein by reference.

TECHNICAL FIELD

This invention relates to a firearm trigger mechanism. More particularly, it relates to a semiautomatic trigger that is mechanically reset by movement of the hammer when it is reset by the bolt carrier.

BACKGROUND

In a standard semiautomatic firearm, actuation of the trigger releases a sear, allowing a hammer or striker to fire a chambered ammunition cartridge. Part of the ammunitions propellant force is used to cycle the action, extracting and ejecting a spent cartridge and replacing it with a loaded cartridge. The cycle includes longitudinal reciprocation of a bolt and/or carrier, which also resets the hammer or striker.

A standard semiautomatic trigger mechanism includes a disconnector, which holds the hammer or striker in a cocked position until the trigger member is reset to engage the sear. This allows the firearm to be fired only a single time when the trigger is pulled and held, because the user is not typically able to release the trigger rapidly enough so that the sear engages before the bolt or bolt carrier returns to its in-battery position. The disconnector prevents the firearm from either firing multiple rounds on a single pull of the trigger, or from allowing the hammer or striker to simply "follow" the bolt as it returns to battery without firing a second round, but leaving the hammer or striker uncocked.

For various reasons, shooters desire to increase the rate of semiautomatic fire. Sometimes this is simply for entertainment and the feeling of shooting a machine gun. In the past, users have been known to employ "bump firing" to achieve rapid semiautomatic fire. Bump firing uses the recoil of the semiautomatic firearm to fire shots in rapid succession. The process involves bracing the rifle with the non-trigger hand, loosening the grip of the trigger hand (but leaving the trigger finger in its normal position in front of the trigger), and pushing the rifle forward in order to apply pressure on the trigger from the finger while keeping the trigger finger stationary. When fired with the trigger finger held stationary, the firearm will recoil to the rear and allow the trigger to reset as it normally does. When the non-trigger hand pulls the firearm away from the body and back forward toward the original position, it causes the trigger to be pressed against the stationary finger again, firing another round as the trigger is pushed back.

Other devices have been offered that facilitate the bump fire process. One is shown in U.S. Pat. No. 6,101,918, issued Aug. 15, 2000, to William Akins for a Method and Apparatus for Accelerating the Cyclic Firing Rate of a Semiautomatic Firearm. This device, sold for some time as the Akins Accelerator™, allowed the receiver and action of the firearm to move longitudinally relative to the butt stock and used a spring to assist forward return movement. Other devices, such as that shown in U.S. Pat. No. 8,127,658, issued Mar. 6, 2012, and other patents owned by Slide Fire Solutions provide a replacement stock and handgrip assembly that facilitates bump firing, but without spring assistance.

Other solutions to increase the rate of semiautomatic fire include pull/release trigger mechanisms. These devices cause one round to be fired when the trigger is pulled and a second round to be fired when the trigger is released. Such a device is shown in U.S. Pat. No. 8,820,211, issued Sep. 2, 2014, entitled Selectable Dual Mode Trigger for Semiautomatic Firearms. A device like this is offered by FosTecH Outdoors, LLC as the ECHO TRIGGER™. Another device, offered by Digital Trigger Technologies, LLC under the name DigiTrigger™, provides a dual mode trigger in which the pull/release operating function is achieved electronically.

The above-described devices either require practice to use reliably, are complex, and/or are expensive to manufacture and install.

Another device for increasing the rate of semiautomatic fire is shown in U.S. Pat. Nos. 9,568,264; 9,816,772; and U.S. Pat. No. 9,939,221, issued to Thomas Allen Graves. The devices shown in these patents forcefully reset the trigger with rigid mechanical contact between the trigger member and the bolt as the action cycles. This invention, however, does not provide a "drop-in" solution for existing popular firearm platforms, like the AR15, AK47 variants, or the Ruger 10/22™. To adapt this invention to an AR-pattern firearm, for example, would require not only a modified fire control mechanism, but also a modified bolt carrier.

SUMMARY OF INVENTION

The present invention provides a semiautomatic trigger mechanism for increasing rate of fire that can be retrofitted into popular existing firearm platforms. In particular, this invention provides a trigger mechanism that can be used in AR-pattern firearms with an otherwise standard M16-pattern bolt carrier assembly. The present invention is particularly adaptable for construction as a "drop-in" replacement trigger module that only requires insertion of two assembly pins and the safety selector. In the disclosed embodiments, the normal resetting of the hammer, as the bolt or bolt carrier is cycled, causes the trigger to be forcibly reset by contact between the hammer and a surface of the trigger member. Once reset, movement of the trigger is blocked by a locking bar and cannot be pulled until the bolt has returned to battery, thus preventing "hammer follow" behind the bolt or bolt carrier.

Other aspects, features, benefits, and advantages of the present invention will become apparent to a person of skill in the art from the detailed description of various embodiments with reference to the accompanying drawing figures, all of which comprise part of the disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

Like reference numerals are used to indicate like parts throughout the various drawing figures; wherein;

FIG. **1** is an isometric view of a drop-in trigger module for an AR-pattern firearm according to one embodiment of the invention;

FIG. **2** is a partially cut-away view thereof;

FIG. **3** is a longitudinal section view showing the module of the embodiment installed in a typical AR15-pattern lower receiver in a cocked and ready to fire status with the bolt and bolt carrier in an in-battery position;

FIG. **4** is a similar view in which the trigger has been pulled and the hammer has fallen against a firing pin; and

FIG. **5** is a similar view showing the bolt carrier in a retracted position, forcing the hammer and trigger into a reset status.

DETAILED DESCRIPTION

With reference to the drawing figures, this section describes particular embodiments and their detailed construction and operation. Throughout the specification, reference to "one embodiment," "an embodiment," or "some embodiments" means that a particular described feature, structure, or characteristic may be included in at least one embodiment. Thus, appearances of the phrases "in one embodiment," "in an embodiment," or "in some embodiments" in various places throughout this specification are not necessarily all referring to the same embodiment. Furthermore, the described features, structures, and characteristics may be combined in any suitable manner in one or more embodiments. In view of the disclosure herein, those skilled in the art will recognize that the various embodiments can be practiced without one or more of the specific details or with other methods, components, materials, or the like. In some instances, well-known structures, materials, or operations are not shown or not described in detail to avoid obscuring aspects of the embodiments.

Referring first to FIGS. **1** and **2**, therein is shown at **10** a "drop-in" trigger module adapted for use in an AR-pattern firearm according to a first embodiment of the present invention. As used herein, "AR-pattern" firearm includes the semiautomatic versions of the AR10 and AR15 firearms and variants thereof of any caliber, including pistol caliber carbines or pistols using a blow-back bolt. While select fire (fully automatic capable) versions of this platform, such as the M16 and M4, are also AR-pattern firearms, this invention only relates to semiautomatic firearm actions. The concepts of this invention may be adaptable to other popular semiautomatics firearm platforms, such as the Ruger 10/22™ or AK-pattern variants.

The module **10** includes a frame or housing **12** that may be sized and shaped to fit within the internal fire control mechanism pocket of an AR-pattern lower receiver. It includes first and second pairs of aligned openings **14**, **16** that are located to receive transverse pins (**40**, **36**, respectively, shown in FIGS. **3-5**) used in a standard AR-pattern trigger mechanism as pivot axes for the hammer and trigger member, respectively. The housing **12** includes left and right sidewalls **20**, **22**, which extend substantially vertically and parallel to one another in a laterally spaced-apart relationship. The sidewalls **20**, **22** may be interconnected at the bottom of the housing **12** at the front by a crossmember **24**.

A hammer **18** of ordinary (MIL-SPEC) AR-pattern shape and construction may be used. The illustrated hammer **18** may be standard in all respects and biased by a typical AR-pattern hammer spring (not shown).

A modified trigger member **26** may be sized to fit between the sidewalls **20**, **22** of the housing **12** and may include a trigger blade portion **28** that extends downwardly. The trigger blade portion **28** is the part of the trigger member **26** contacted by a user's finger to actuate the trigger mechanism. The trigger blade portion **28** may be curved (shown) or straight, as desired. The trigger member **26** may pivot on a transverse pin **36** (not shown in FIGS. **1** and **2**) that extends through aligned openings **16** in the sidewalls **20**, **22** of the housing **12**. The same pin **36** is aligned and positioned within aligned openings **47** of a lower receiver **50** to assemble the module **10** into a fire control mechanism pocket **49** of the lower receiver **50**, as shown in FIGS. **3-5**, for example. The modified trigger member **26** may have integral first and second contact surfaces **30**, **32**. Some part of the trigger member **26** includes contact surfaces for interaction with the hammer **18** and locking bar **62**. For example, the trigger member **26** can include first and second upwardly extended rear contact surfaces **30**, **32**. The first contact surface **30** is positioned to interact, for example, with a tail portion **44** of the hammer **18** that extends rearwardly from a head part **42** of the hammer **18**. The second contact surface **32** is positioned to interact with a locking bar **62**. The contact surfaces may be integral to a specially formed trigger body or may be a separate insert (shown) that is made to closely fit and mate with a standard AR-pattern trigger member, held in place by the trigger pin **36**, with no lost motion between the parts.

The hammer **18** may include bosses **34** coaxial with a transverse pivot pin opening **38** that receives an assembly/pivot pin **40** (not shown in FIGS. **1** and **2**) through the first set of aligned openings **14** in the housing **12** (and through openings **51** in the firearm receiver, to position the trigger module **10** within the fire control mechanism pocket **49** of the lower receiver **50**, as shown in FIGS. **3-5**). The bosses **34** may fit between the sidewalls **20**, **22** of the housing **12** to laterally position the hammer **18**, or can be received in the openings **14** (if enlarged) so that the hammer **18** stays assembled with the module **10** when the hammer's pivot pin is removed and/or when the module **10** is not installed in a firearm receiver. The hammer **18** includes a head portion **42** and a tail portion **44**. The hammer **18** also includes a sear catch **46** that engages the sear **48** on the trigger member **26**, when cocked. The trigger and hammer pins **36**, **40** provide pivot axes at locations (openings **47**, **51**, shown in FIGS. **3-5**, for example) standard for an AR-pattern fire control mechanism. Although FIGS. **3-5** are a longitudinal section view and only show one of the aligned openings **47**, **51**, it is understood that a typical AR15-pattern lower receiver **50** includes second, corresponding and aligned openings **47**, **51** in the half of the receiver **50** not shown).

Referring now also to FIG. **3**, the trigger module **10** is shown installed in the fire control mechanism pocket **49** of an AR-pattern lower receiver **50**. Other lower receiver parts not important to the present invention are well-known in the art and are omitted from all figures for clarity. As is well-known in the art, the bolt carrier assembly **52** (or blow-back bolt) would be carried by an upper receiver (not shown) and engage the breach of a barrel or barrel extension. As used herein, "bolt carrier" and "bolt carrier assembly" may be used interchangeably and include a blow-back type bolt used in pistol caliber carbine configurations of the AR-platform. The hammer **18** is shown in a cocked position and a bolt carrier assembly **52** is shown in an in-battery position. The sear **48** engages the sear catch **46** of the hammer **18**.

The bolt carrier assembly **52** used with the embodiments of this invention can be an ordinary (mil-spec) M16-pattern bolt carrier assembly, whether operated by direct impingement or a gas piston system, that has a bottom cut position to engage an auto sear in a fully automatic configuration. The bottom cut creates an engagement surface **54** in a tail portion **56** of the bolt carrier body **58**. This is distinct from a modified AR15 bolt carrier that is further cut-away so that engagement with an auto sear is impossible. The semiautomatic AR-pattern safety selector switch **60** may also be standard (MIL-SPEC) in all respects.

The trigger module of the present invention includes a trigger locking bar **62** carried on a frame **66** for pivotal movement on a transverse pivot pin **68**. The frame **66** may be part of the module housing **12**, if configured as a "drop-in" unit. An upper end of the locking bar **62** extends above the upper edge of the housing **12** and lower receiver **50** to be engaged by the engagement surface **54** of the bolt

carrier body **58** when the bolt carrier assembly **52** is at or near its in-battery position (as shown in FIG. **3**). Contact between the engagement surface **54** and upper end of the locking bar **62** causes the locking bar **62** to pivot into a first position (FIG. **3**) against a biasing spring **70** and allows pivotal movement of the trigger member **26**. If desired, the locking bar **62** may include a rearward extension **64** that serves as a means to limit the extent to which it can pivot toward the blocking position.

Referring now also to FIG. **4**, when the safety selector **60** is in the "fire" position (as shown in all figures), finger pressure pulling rearward against the trigger blade portion **28** causes the trigger member **26** to rotate on the pivot pin **36**, as indicated by arrows. This rotation causes the sear **48** to disengage from the sear catch **46** of the hammer **18**. This release allows the hammer **18** to rotate by spring force (hammer spring omitted for clarity) into contact with the firing pin **72**. Any contact between the rear portion of the trigger member **26** and front surface of the locking bar **62** will simply cause the locking bar **62** to rotate out of the way, as illustrated in FIG. **4**.

Referring now to FIG. **5**, discharging an ammunition cartridge (not shown) causes the action to cycle by moving the bolt carrier assembly **52** rearwardly, as illustrated. The same effect occurs when the action is cycled manually. As in an ordinary AR15-pattern configuration, a lower surface **76** of the bolt carrier body **58** pushes rearwardly against the head portion **42** of the hammer **18**, forcing it to pivot on the hammer pivot/assembly pin **40** against its spring (not shown) toward a reset position. As the rearward movement of the bolt carrier body **58** and pivotal movement of the hammer **18** continues, mechanical interference or contact between a rear surface **74** of the hammer **18** (such as on the tail portion **44**) and a contact surface **30** of the trigger member **26** forces the trigger to pivot (arrows in FIG. **5**) toward and to its reset position. At the same time, as the trigger member **26** is reset, the biasing spring **70** moves the lower end of the locking bar **62** into a second position (FIG. **5**) in which it blocks pivotal movement of the trigger **26**, including by finger pressure applied (or reapplied) to the trigger blade **28**. Thus, as the bolt carrier assembly **52** returns forward, the trigger member **26** is held in its reset position by the locking bar **62** where the hammer sear catch **46** will engage with the sear **48** carried on the trigger member **26** to reset the fire control mechanism. The trigger member **26** cannot be pulled to release the sear/hammer engagement, thus precluding early hammer release or "hammer follow" against the bolt carrier assembly **52** and firing pin **72** as the bolt carrier assembly **52** is returning to battery. A trigger return spring (not shown) of the type used in a standard AR-pattern trigger mechanism may be unnecessary in this case, because the trigger member **26** is forced to return by the hammer **18**, but may be used, if desired.

When the bolt carrier assembly **52** has reached (or nearly reached) its closed, in-battery position (shown in FIG. **3**), the engagement surface **54** of the bolt carrier tail portion **56** contacts and forwardly displaces the upper end of the locking bar **62**, disengaging the second contact surface **32** of the trigger member **26**, allowing the trigger **26** to be pulled a second time. The distance of travel during which there is no interference between the locking bar **62** and second contact surface **32** of the trigger member **26**, allowing the trigger member **26** to be manually displaced, may be about from about 0.10 to 0.31 inch. This prevents early release of the hammer **18** and contact of the hammer against the firing pin **72** before the bolt is completely locked and in-battery.

Force applied by the user's trigger finger against the trigger blade portion **28** is incapable of overcoming the mechanical interference and force of the hammer **18** against the contact surface **30** of the trigger member **26**. However, the trigger can immediately be pulled again—only by application of an external force—as soon as the locking bar **62** has been rotated against the spring **70** and out of blocking engagement with the trigger member **26**, as the bolt carrier assembly **52** approaches or reaches its in-battery position. This allows the highest possible standard rate of fire, without risk of hammer-follow, for the semiautomatic action of the firearm.

While various embodiments of the present invention have been described in detail, it should be apparent that modifications and variations thereto are possible, all of which fall within the true spirit and scope of the invention. Therefore, the foregoing is intended only to be illustrative of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not intended to limit the invention to the exact construction and operation shown and described. Accordingly, all suitable modifications and equivalents may be included and considered to fall within the scope of the invention, defined by the following claim or claims.

What is claimed is:

1. For a firearm having a receiver with a fire control mechanism pocket, transversely aligned pairs of hammer and trigger pin openings in side walls of the pocket, and a bolt carrier that reciprocates and pivotally displaces a hammer when cycled, a trigger mechanism, comprising:

a hammer having a sear notch and mounted in the fire control mechanism pocket to pivot on a transverse hammer pin between set and released positions;

a trigger member having a sear and mounted in the fire control mechanism pocket to pivot on a transverse trigger pin between set and released positions, the trigger member having a surface positioned to be contacted by the hammer when the hammer is displaced by cycling of the bolt carrier, the contact causing the trigger member to be forced to the set position;

a locking bar pivotally mounted in a frame and spring biased toward a first position in which the locking bar mechanically blocks the trigger member from moving to the released position, and movable against the spring bias to a second position when contacted by the bolt carrier reaching a substantially in-battery position, allowing the trigger member to be moved by an external force to the released position.

2. The trigger mechanism of claim **1**, wherein the trigger member has a second surface positioned to be contacted by the locking bar when the locking bar is in the first position.

3. The trigger mechanism of claim **1**, wherein the locking bar includes means for limiting the extent to which the locking bar can pivot by the spring bias toward the first position.

4. For a firearm having a receiver with a fire control mechanism pocket, assembly pin openings in side walls of the pocket, and a bolt carrier that reciprocates and pivotally displaces a hammer when cycled, a trigger mechanism, comprising:

a housing having transversely aligned pairs of openings for receiving hammer and trigger assembly pins;

a hammer having a sear notch and mounted in the housing to pivot on a transverse axis between set and released positions;

a trigger member having a sear and mounted in the housing to pivot on a transverse axis between set and

released positions, the trigger member having a surface positioned to be contacted by the hammer when the hammer is displaced by the bolt carrier when cycled, the contact causing the trigger member to be forced to the set position;

a locking bar pivotally mounted in the housing and spring biased toward a first position in which the locking bar mechanically blocks the trigger member from moving to the released position, and movable against the spring bias to a second position when contacted by the bolt carrier reaching a substantially in-battery position in which the trigger member can be moved by an external force to the released position.

5. The trigger mechanism of claim **4**, wherein the trigger member has a second surface positioned to be contacted by the locking bar when the locking bar is in the first position.

6. The trigger mechanism of claim **4**, wherein the housing's transversely aligned pairs of openings for receiving hammer and trigger assembly pins are aligned with the assembly pin openings in the fire control mechanism pocket of the receiver.

7. The trigger mechanism of claim **4**, wherein the locking bar includes means for limiting the extent to which the locking bar can pivot by the spring bias toward the first position.

* * * * *

U.S. Department of Justice

Bureau of Alcohol, Tobacco,
Firearms and Explosives

Martinsburg, WV 25405

www.atf.gov

AUG 2 8 2018

907010: RKD
3311/307385

[redacted]

Dear Sir,

This is in reference to your submission and accompanying correspondence to, Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), Firearms Technology Industry Services Branch (FTISB), accompanied by an AR-15 type rifle equipped with what is described as the [redacted] AR1 trigger system (see enclosed photos). Specifically, you requested an examination and classification of this sample with regard to the amended Gun Control Act of 1968 (GCA) and the National Firearms Act (NFA).

As you know, the National Firearms Act (NFA), 26 U.S.C. § 5845(b), defines the term "**machinegun**" as—

...any weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. The term shall also include the frame or receiver of any such weapon, any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.

As specified in the GCA, 18 U.S.C. § 921(a)(23), the term "machinegun" has "*the meaning given such term in section 5845(b) of the National Firearms Act (26 U.S.C. 5845(b)).*

The submitte[redacted] AR1, is described as a "*trigger-finger reset device*". You further describe the design and function of the device by explaining that "***this trigger system works by mechanically pushing the trigger rapidly forward, resetting the finger and trigger to the forward***

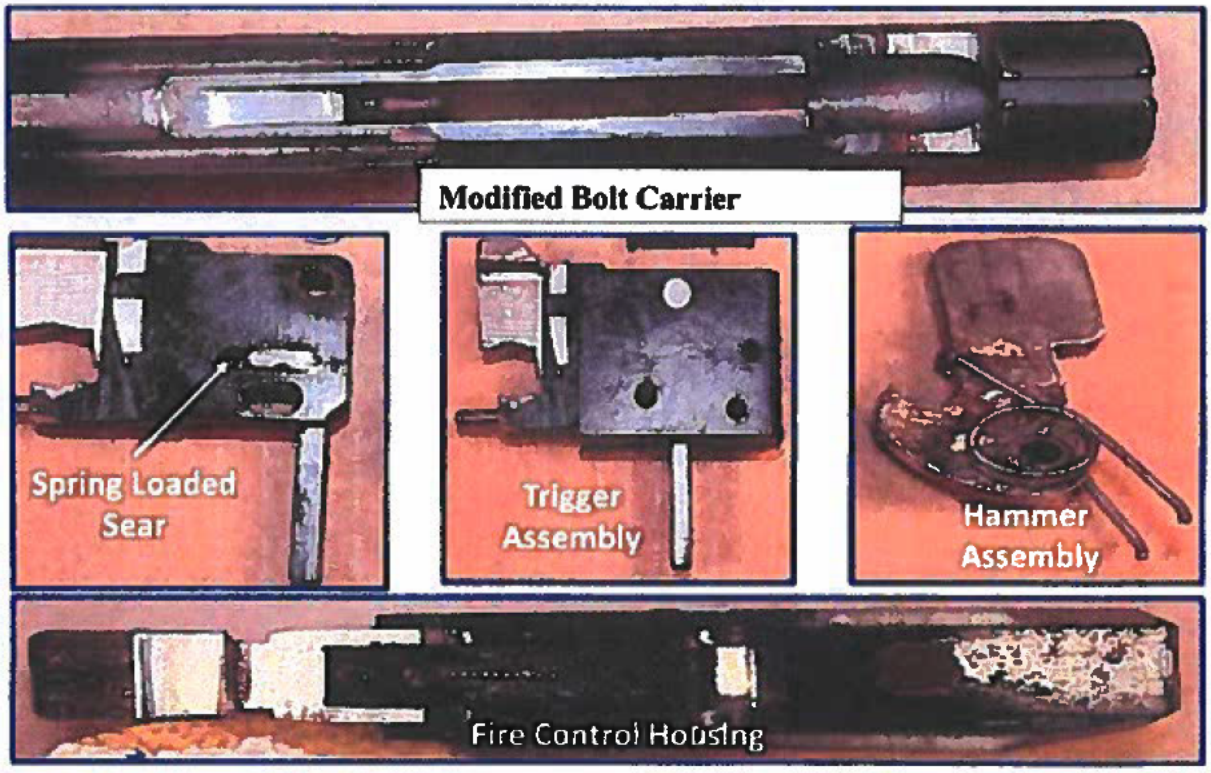
[redacted]

positon. This allows the user to make a decision in which they leave rearward pressure off the trigger to stop the firing sequence, or re-engage rearward pressure on the trigger to continue the firing sequence. " As a part of this description, you note that all of the components of the [redacted] AR1 trigger are newly designed and include a bolt, housing, trigger, hammer, sear, springs and pins. FTISB notes that US Patent 9568264 (Flex-fire technology) covers the device, which is described as a technology to provide the potential of increasing both the rate of fire and the precision of fire at higher rates beyond the fundamental design capabilities of pre-existing semi-automatic arms.

Also, your correspondence notes that ATF has previously interpreted the phrase "single function of the trigger" to mean a single movement of the trigger, whether that movement is the pull of the trigger or the release of the trigger and it is your opinion that this device submitted is only a trigger reset device and not a "machinegun" as defined.

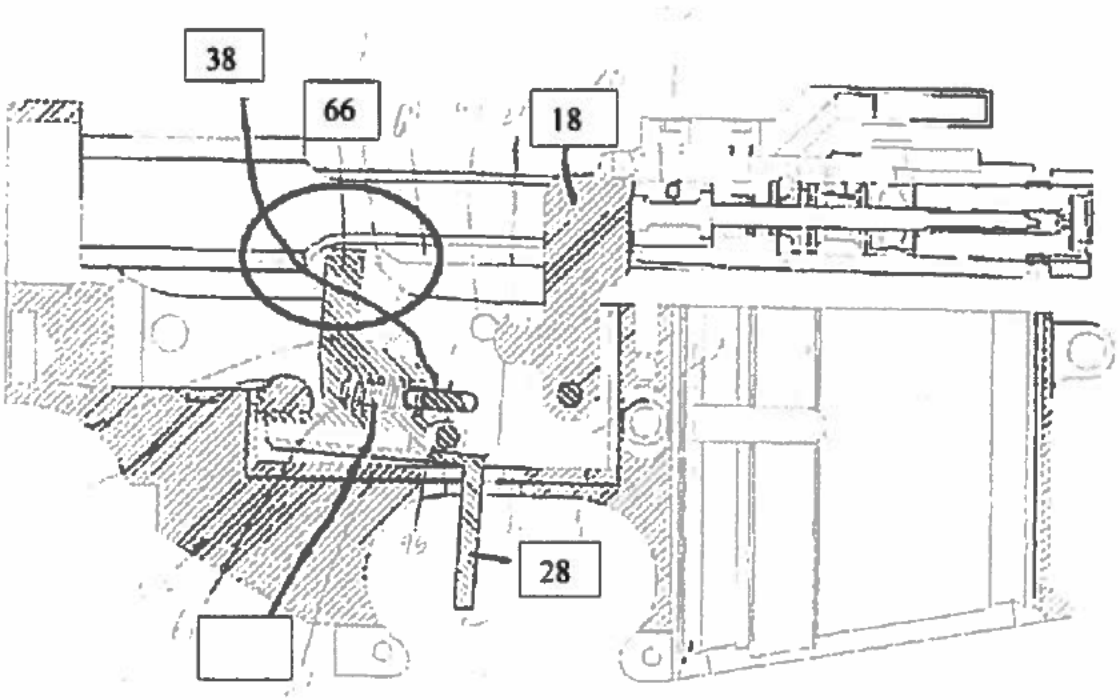
The sample examined by FTISB personnel consists of a Colt Competition .223/5.56 caliber AR-15 pattern rifle, serial number CCR012176, which is equipped with the following items:

- Modified bolt carrier.
- Newly constructed hammer assembly.
- Newly constructed fire control housing.
- Newly constructed trigger assembly having steel block mounted on rear of assembly.
- Newly constructed spring loaded sear assembly.
- Miscellaneous retaining axles/screws, plungers/springs.



[redacted]

Provided illustration of [redacted] AR1 Trigger Device.



This illustration depicts how the parts interact

No 66 is the extension of the trigger that rests in the bolt cam

No 28 is the portion of the trigger that interacts with the user's finger

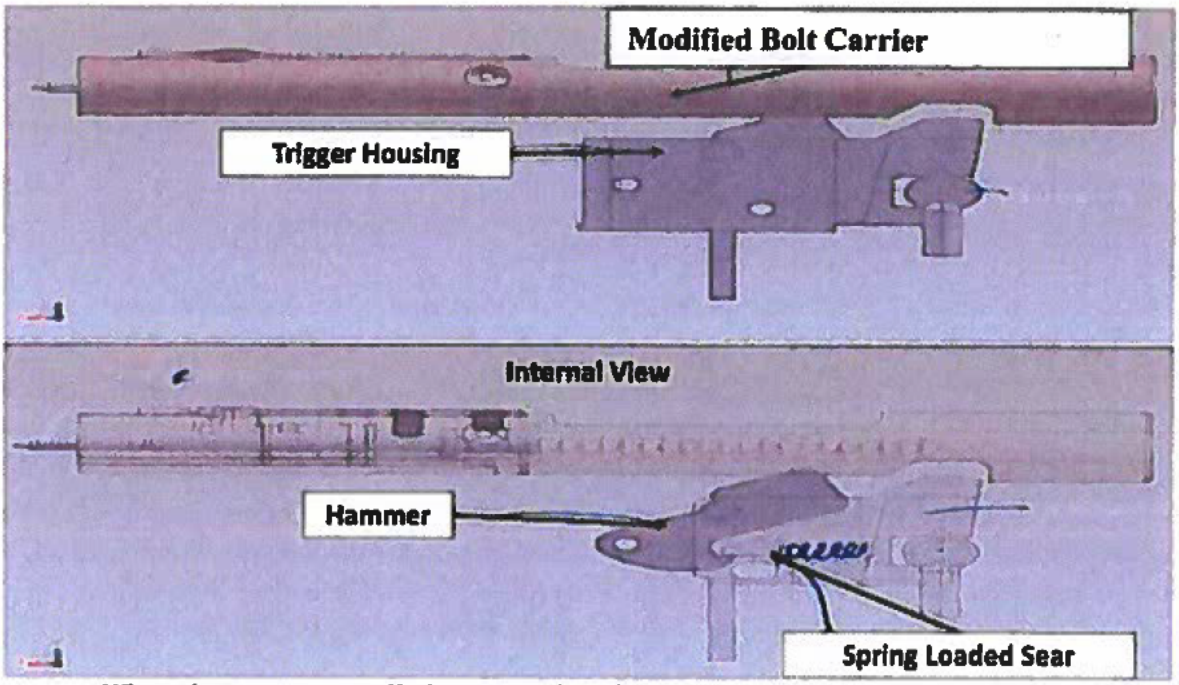
No 38 is the spring loaded sear

No 18 is the hammer

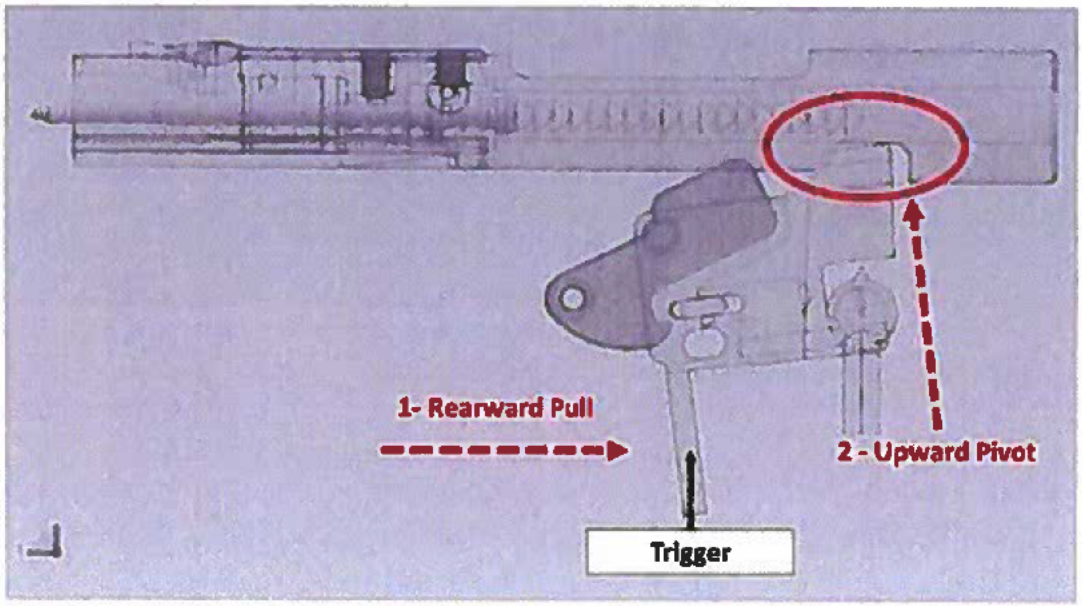
The written correspondence received from [redacted] with the sample, provided the following statements and pictures offering a description of how the device differed in function from that of a standard unmodified AR-15 pattern rifle [Note: FTISB updated the pictures relevant to FTISB's analysis of the [redacted] AR1]:

"We start with the trigger in the forward position and the hammer in the cocked position, with the bolt in battery."

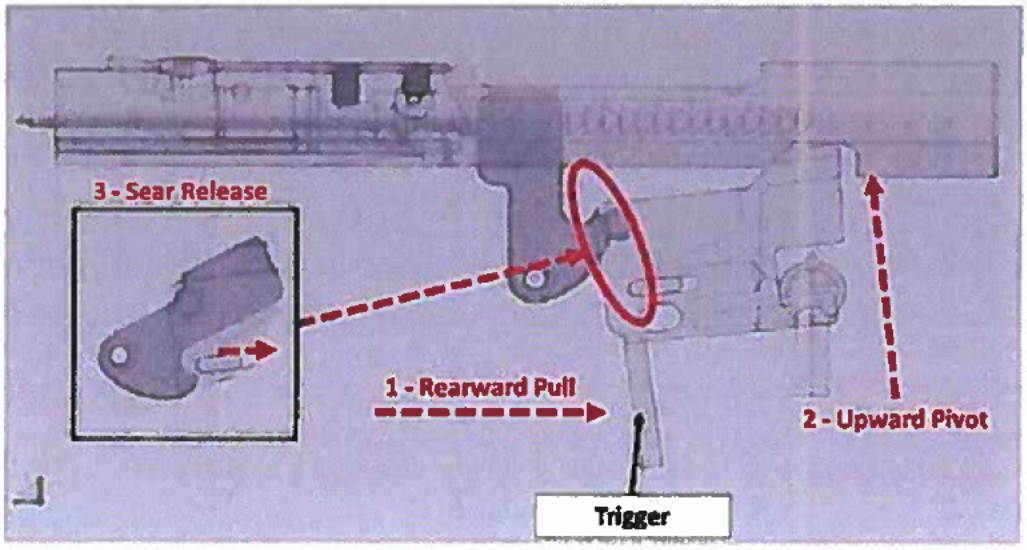
[redacted]



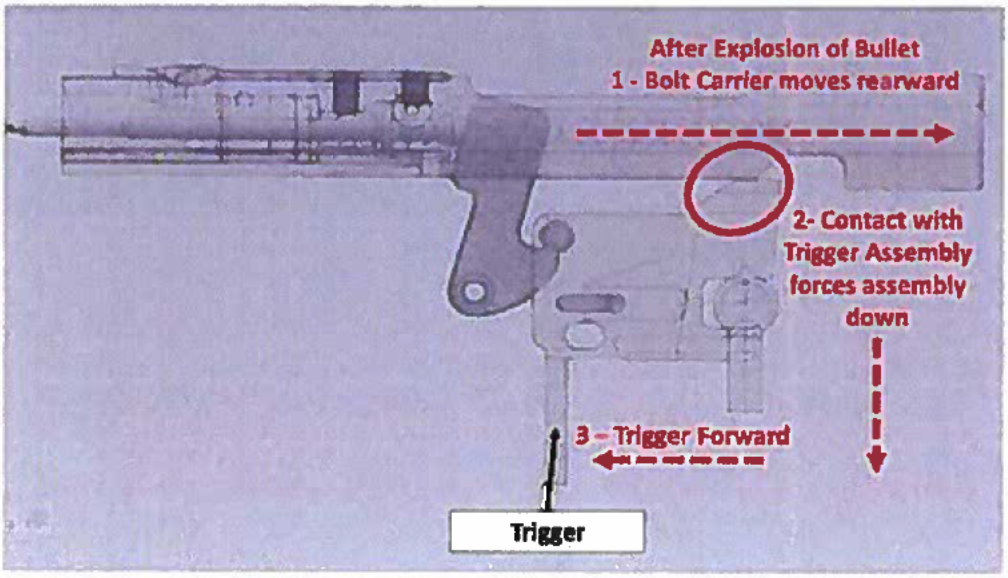
"When the trigger is pulled rearward it also pivots upward into an open space in the bolt.



"As the trigger pivots back and up into the open space in the bolt, the sliding sear surface in the trigger separates from the tail of the hammer and the hammer releases and fires a round."

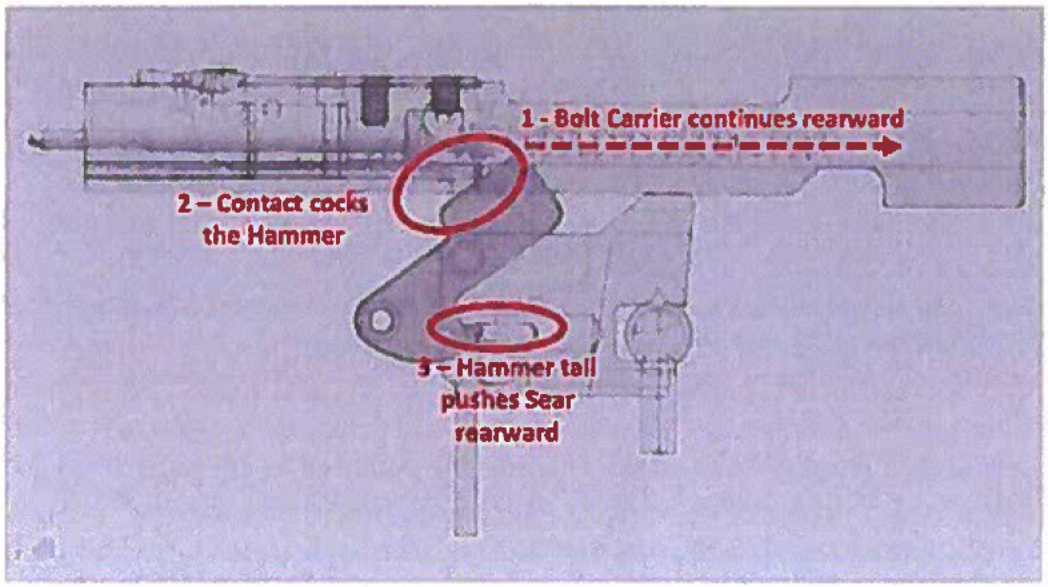


"The explosion of the bullet causes the bolt to move in a rearward direction. As the bolt moves rearward it contacts the top of the trigger and forces the tip of the trigger down, pivoting the blade of the trigger to the forward (reset) position."

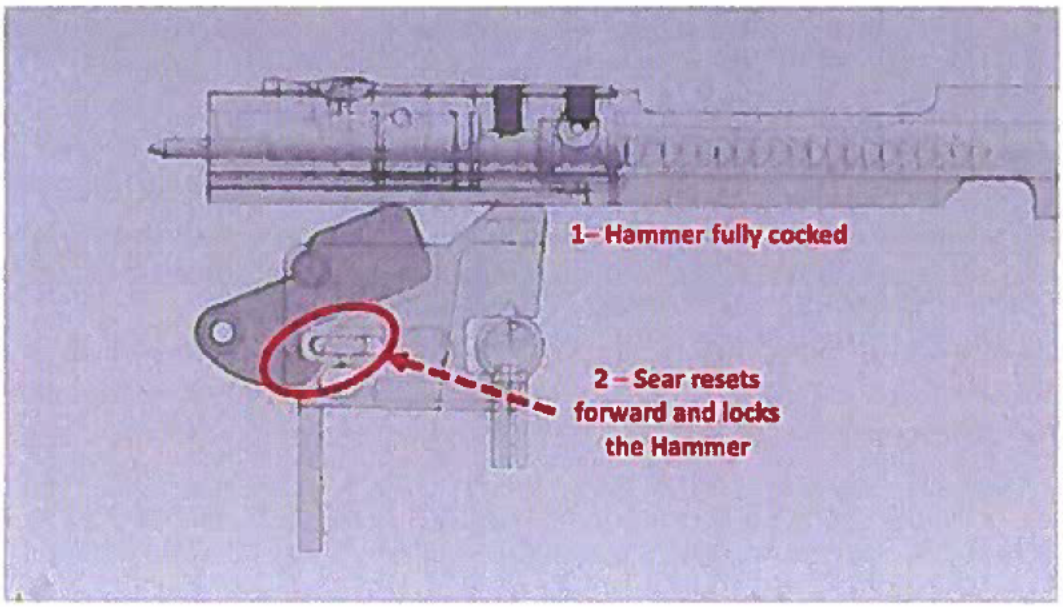


"At this point the trigger is in the forward (un-pulled) position. The bolt continues rearward cocking the hammer, which moves the integrated trigger sear rearward". [We note that the shooter maintains a constant rearward pull on the trigger and the internal mechanism automatically forces the individual's finger/trigger forward instead of requiring that the shooter release the trigger.]

[redacted]



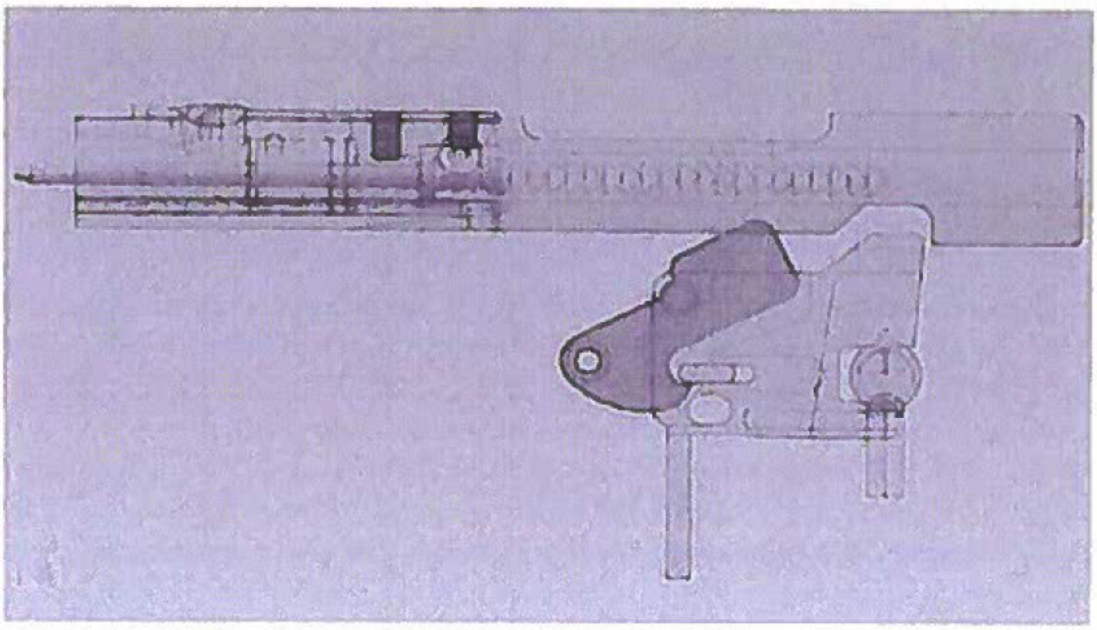
"At the rear of the bolt's stroke the hammer is cocked and the trigger sear is forced forward into a reset position (by spring pressure), locking the hammer in the cocked position."



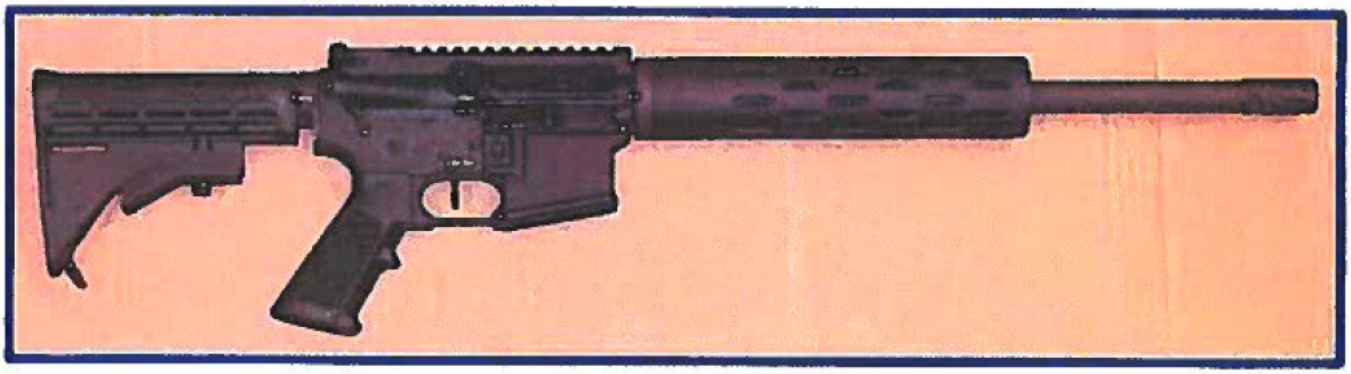
"The bolt returns to battery and the hammer is now cocked against the trigger ready to fire the next round".

As explained below, a single constant rearward pull will cause the firearm to fire until the trigger is released, the firearm malfunctions, or the firearm exhausts its ammunition supply.

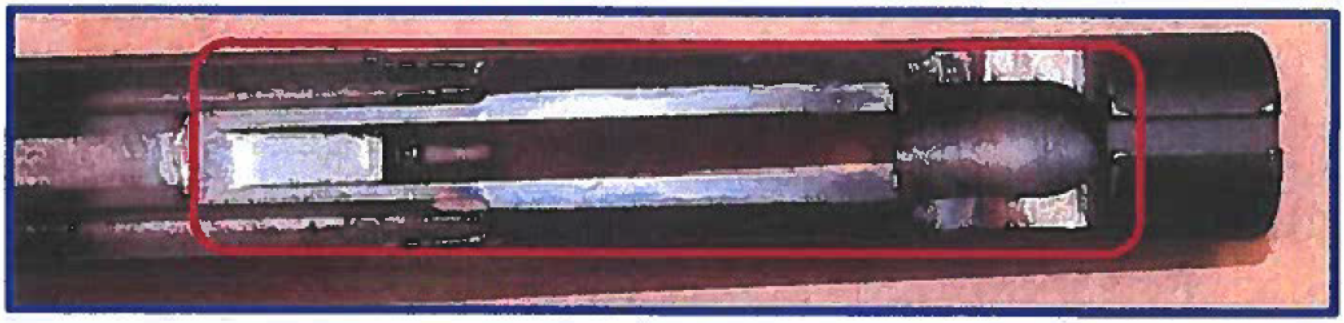
[redacted]



Submitted Sample Rifle



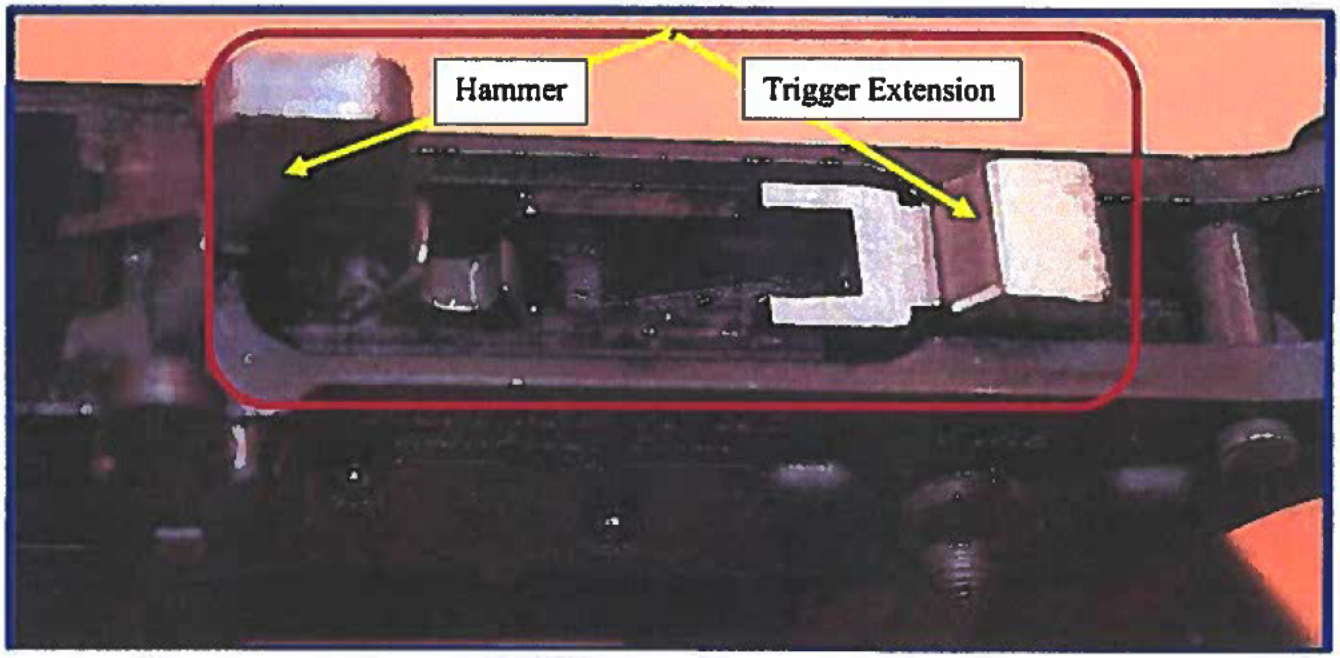
Sample modified bolt carrier showing added contact surface that interfaces with trigger.



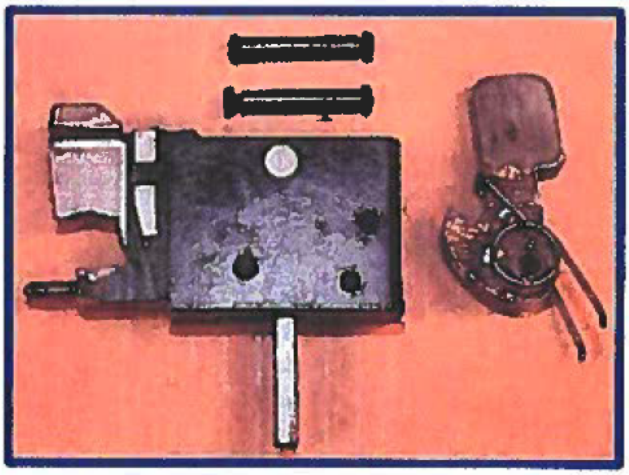
[redacted]

FTCB exemplar standard bolt carrier.

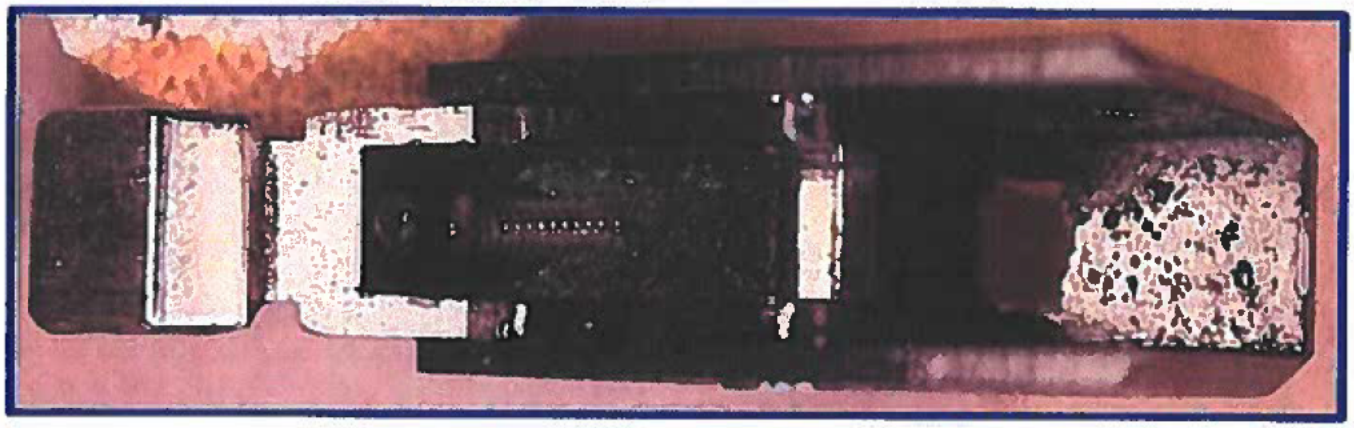
Internal View - Sample fire control mechanism (installed).



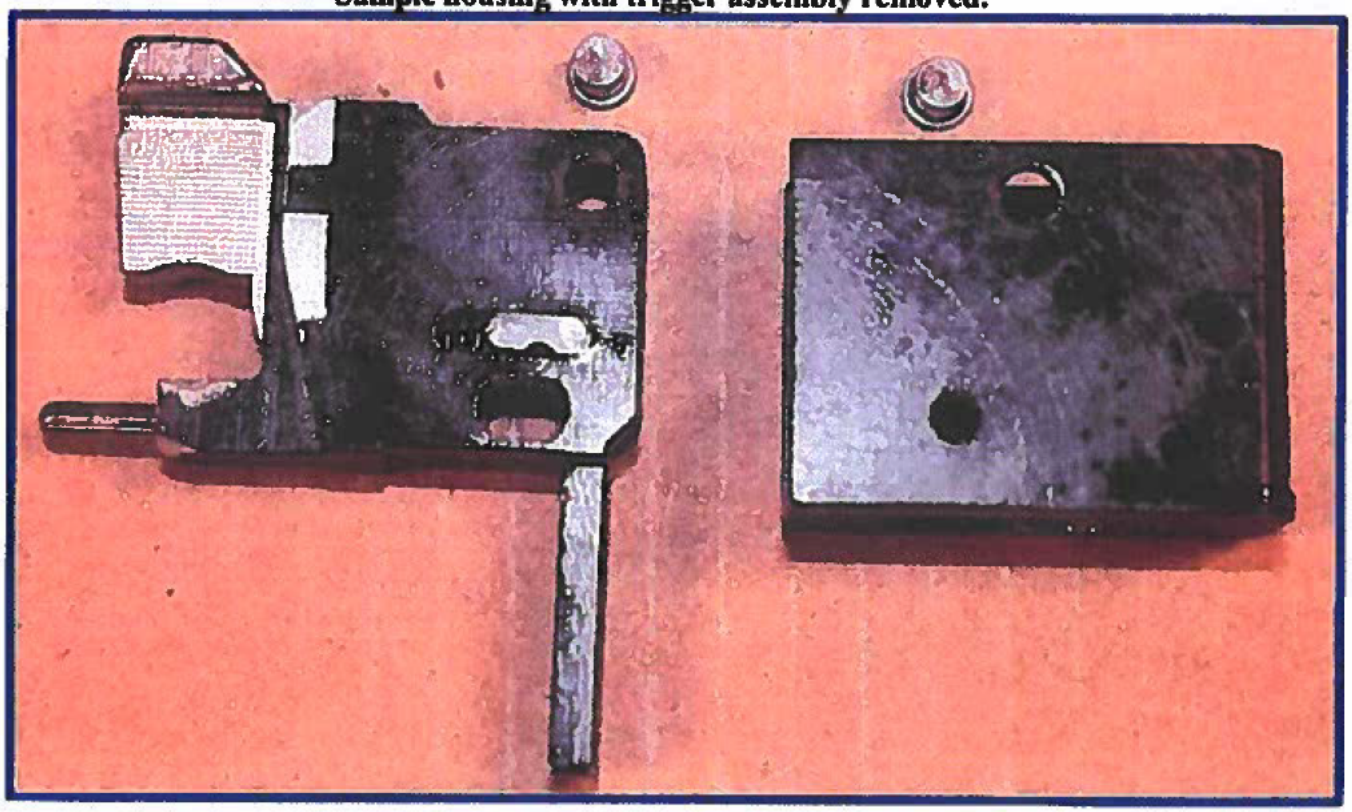
Sample fire control mechanism with the bolt carrier removed from firearm.



Overhead view of fire control mechanism

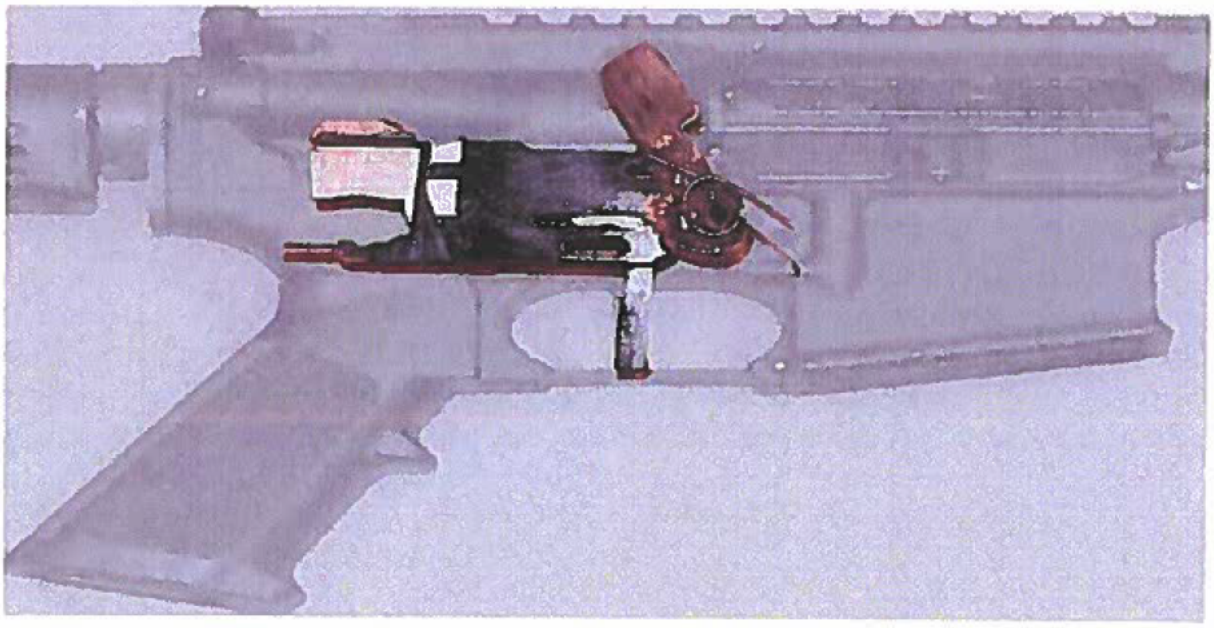


Sample housing with trigger assembly removed.



[redacted]

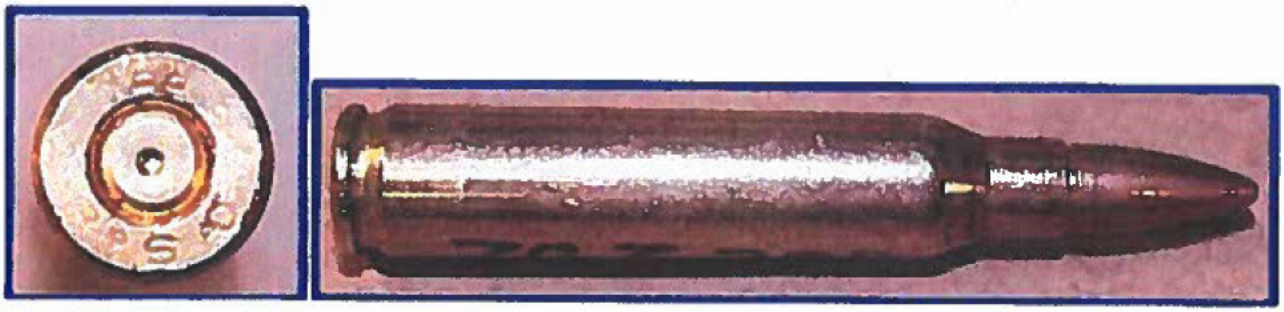
Sampl[redacted]AR1 fire control mechanism installed in AR-15 type firearm.



As a part of this examination, FTISB conducted initial manual field-testing of the sample. The field test revealed that when the trigger was pulled with sufficient force to release the hammer, and the shooter maintains constant pressure on the trigger, the firearm expelled a projectile, extracted and ejected the casing, loaded another round, and fired. This continued until the trigger was released. A test fire with live ammunition resulted in the firearm shooting automatically more than one shot, without manual reloading, by a single function of the trigger.

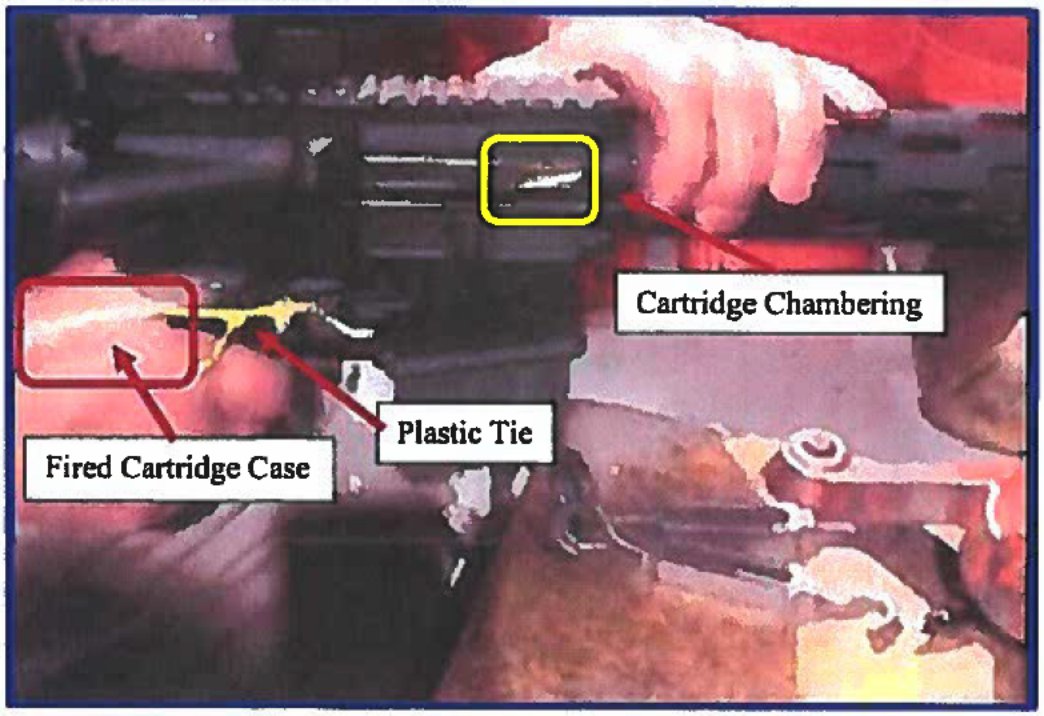
Additionally, during the finger activated firing sequences (with the trigger finger retained in a constant position), after firing several cartridges the sear failed to retain the hammer, which simply followed the bolt forward leaving a substantial firing pin mark on the primer of the chambered cartridge without firing the cartridge.

Photo of FTISB test cartridge removed from sample after hammer follow incident.



In order to demonstrate the sample fired more than one shot, without manual reloading, with a single function of the trigger, rather than firing a single shot with each function of the trigger, the following procedure was followed.

- A common 8-inch zip-tie was installed around the rear of the grip and the front of the sample's trigger.
- The zip-tie was gradually tightened until the trigger was retracted just enough to release the hammer.
- With the trigger retained in this position, the bolt assembly was retracted and retained in an open position, with the aid of the bolt catch.
- A ten-round ammunition load was placed into the sample's magazine, and the magazine was inserted into the firearm.
- Without touching the trigger (which was being retained in a fixed position by the plastic zip-tie), the bolt catch was depressed allowing the firearms bolt to travel forward and chamber a cartridge. Upon chambering and firing the first cartridge, the weapon cycled and fired five cartridges automatically without the trigger being released. The sear also failed to retain the hammer on the 6th cartridge, but did not strike the primer with sufficient force to fire that cartridge, thereby stopping the firing sequence.
- This same test was repeated several times with the sample firing from three to ten cartridges with a single function of the trigger before a malfunction was encountered or the ammunition load expended.



[redacted]

The previous still image extracted from a video of the FTISB test fire shows cartridge chambering in the yellow box and one of the ejected cartridges in the red box. Note that additional ejected cartridge cases are out of frame and trigger is retained with zip-tie and not in contact with finger.

Federal law defines "machinegun," in relevant part, as "any weapon which shoots, is designed to 1shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger" as well as a "combination of parts designed and intended, for use in converting a weapon into a machinegun." Legislative history for the NFA indicates that the drafters equated a "single function of the trigger" with "single pull of the trigger." National Firearms Act: Hearings Before the Comm. on Ways and Means, House of Representatives, Second Session on H.R. 9066, 73rd Cong., at 40 (1934). Therefore, as you note, ATF has long held that a single function of the trigger is a "single pull" or alternatively, a single release of a trigger. Therefore, a firearm is not a machinegun if a projectile is expelled when the trigger is pulled and a second projectile is expelled when the trigger is released.

As stated above, your own description of the [redacted] AR1 trigger system includes the following statements, "*this trigger system works by mechanically pushing the trigger rapidly forward, resetting the finger and trigger to the forward positon. This allows the user to make a decision in which they leave rearward pressure off the trigger to stop the firing sequence, or re-engage rearward pressure on the trigger to continue the firing sequence.*"

Federal courts have noted that automatically means that the weapon "fires repeatedly with a single pull of the trigger." *Staples v. United States*, 511 U.S. 600, 602 n. 1 (1994). "That is, once its trigger is depressed, the weapon will automatically continue to fire until its trigger is released or the ammunition is exhausted." *Id.* Courts have specifically affirmed ATF's interpretation that a single act of the shooter to initiate the firing sequent is a single function of the trigger. *Akins v. United States*, 312 F. App'x 197, 200 (11th Cir. 2009); *Freedom Ordnance Mfg., Inc. v. Brandon*, No. 3:16-cv-00243-RLY-MPB (S.D. Ind. Mar. 27, 2018). *United States v. Fleischli*, 305 F.3d 643, 655 (7th Cir. 2002)(in which electronic switch was the trigger when it served to initiate the firing sequence and the minigun continued to fire until the switch was turned off or the ammunition was exhausted). In the *Freedom Ordnance* case, the United States District Court of Indiana confirmed that ATF was not arbitrary and capricious in the classification of an "electronic reset assist device" as a machinegun even though the firearm's trigger reset before each shot by pushing the shooter's finger forward. *Freedom Ordnance Mfg., Inc*, No. 3:16-cv-00243-RLY-MPB. In these cases, a firearm is a machinegun when an internal mechanism or operation automatically forces the individual's finger forward instead of requiring that the shooter release the trigger.

FTISB testing indicated that continuous rearward pressure after the initial pull of the trigger initiates a "firing sequence" which discharges multiple rounds with a single function of the trigger. A device with a trigger that is mechanically forced forward during a cycle of operation or firing sequence, which results in more than one round being fired with a "single function of a trigger," is a machinegun. This type of operation is distinguishable from firearms that have not been classified as machineguns, including those that fire one round when the trigger is manually pulled and one round when the trigger is manually released.

The [redacted] AR1 is a device which is designed to assist in preventing the hammer from positively resetting (requiring that the shooter release the trigger in order to fire the next round) and causes a firearm to shoot automatically more than one shot, without manual reloading, by a single function of the trigger. This device is a, combination of parts designed and intended, solely and exclusively, for use in converting a weapon into a machinegun; thus a "machinegun" as defined in 26 U.S.C. § 5845(b).

Additionally, note that on several occasions during the testing of this device, the hammer was found to have followed the bolt into battery as it chambered a cartridge. FTISB has also evaluated similar devices, which have prevented the trigger from positively resetting and resulted in such a "hammer-follow" scenario. A device designed to prevent the hammer from positively resetting could cause a firearm to shoot automatically more than one shot, without manual reloading, by a single function of the trigger, and would also be classified as a combination of parts designed and intended, solely and exclusively, for use in converting a weapon into a machinegun; thus a "**machinegun**" as defined in 26 U.S.C. 5845(b).

Consequently, the submitted sample [redacted] AR1 trigger assembly equipped firearm is a "machinegun" as defined in the NFA, and is subject to all NFA provisions. In addition, the sample [redacted] AR1 trigger assembly parts are a combination of parts designed and intended, for use in converting a weapon into a machinegun, and as such, in and of themselves, would be defined as a "machinegun" and subject to all NFA provisions.

The GCA prohibits the possession or transfer of any machinegun manufactured after May 19, 1986 with the limited exceptions of transfers to or by the government, and possession under the authority of the government. *See* 18 U.S.C. § 922(o). Based on these exceptions, Type 07 (manufacturer) and Type 08 (importer) Federal firearms licensees to manufacture or import firearms after May 19, 1986 for sale or distribution to the government. Because you are a 07/02 FFL/SOT, ATF will return the [redacted] AR1 trigger device equipped firearm upon receipt of a prepaid common carrier shipping label or FedEx shipping account billing number. Please be advised that the firearm/device will need to be properly marked, and an ATF Form 2 submitted by the close of the following business day that you receive the sample.

We thank you for your inquiry and trust that the foregoing has been responsive.

Sincerely yours,

Michael R. Curtis
Chief, Firearms Technology Industry Services Branch

cc: Rick Vasquez Firearms LLC

JPB

Shipped from: (818) 624-5307 [redacted]

Rick Vasquez Firearms LLC
235 Deer Creek Road
Winchester VA 22602

EVAL. 307-385

The [redacted] AR1 trigger system is being submitted for evaluation as a trigger-finger reset device. This trigger system works by mechanically pushing the trigger rapidly forward, resetting the finger and trigger to the forward position. This allows the user to make a decision in which they leave rearward pressure off the trigger to stop the firing sequence, or re-engage rearward pressure on the trigger to continue the firing sequence. It is our opinion that this device submitted is only a trigger reset device, nevertheless it has been submitted for your classification.

Definitions: COLT COMPETITION SN: CCR012176 AR-15

A firearm: 18 U.S.C. § 921(a)(3), the Gun Control Act of 1968 ("GCA") defines the term "firearm" to include "any weapon (including a starter gun) which will or is designed to or may be readily converted to expel a projectile by the action of an explosive, the frame or receiver of any such weapon…"

A machinegun: 26 U.S.C. § 5845(b), the National Firearms Act, Title II of the GCA ("NFA"), defines "machinegun" to include "any weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. This term shall also include the frame or receiver of any such weapon, any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person." (The mechanical function of the [redacted] AR1 trigger does not fall within the definition of "machinegun" under the NFA.)

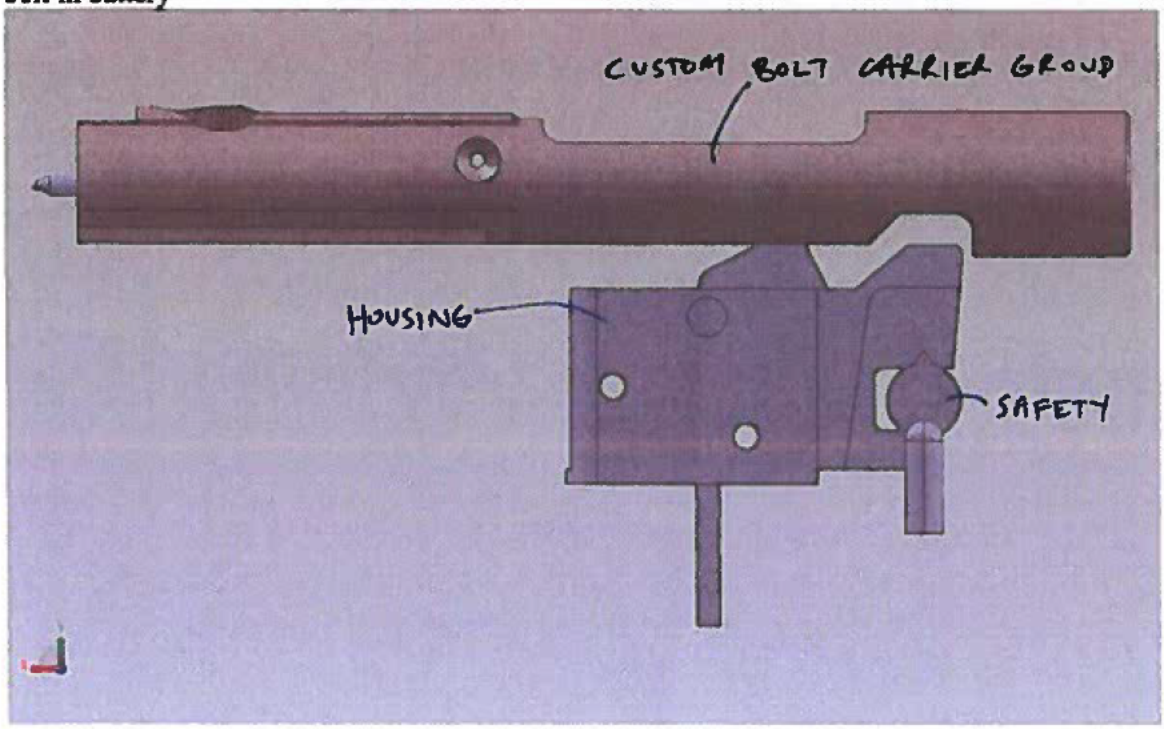
ATF has previously interpreted the phrase "single function of the trigger" to mean a single movement of the trigger, whether that movement is the *pull* of the trigger or the *release* of the trigger. A trigger "functions" by causing the firing sequence to begin. This could be described as the release of a hammer or a striker.

Consequently, if the firearm or device will allow more than one shot to fire when the trigger is pulled or when the trigger is released, then the firearm would have the capability to fire more than one shot by the single function of the trigger. This would make the firearm a machinegun as defined.

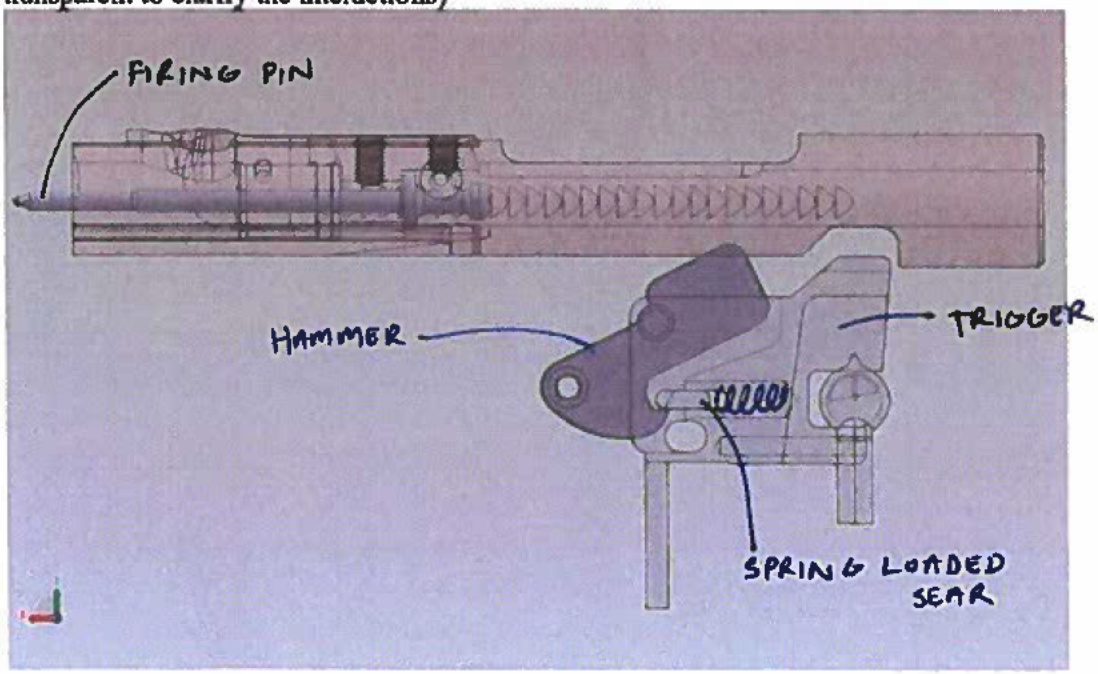
The [redacted] AR1 trigger is specifically designed to only fire a single round on each rearward movement of the trigger. All of the components of the [redacted] AR1 trigger are newly designed and include a bolt, housing, trigger, hammer, sear, springs and pins. These components interact in a manner which, upon pulling the trigger, the hammer is released from the sear firing a single round. In layman's terms, following is the firing sequence:

[redacted] AR1 Trigger:

We start with the trigger in the forward position and the hammer in the cocked position, with the bolt in battery

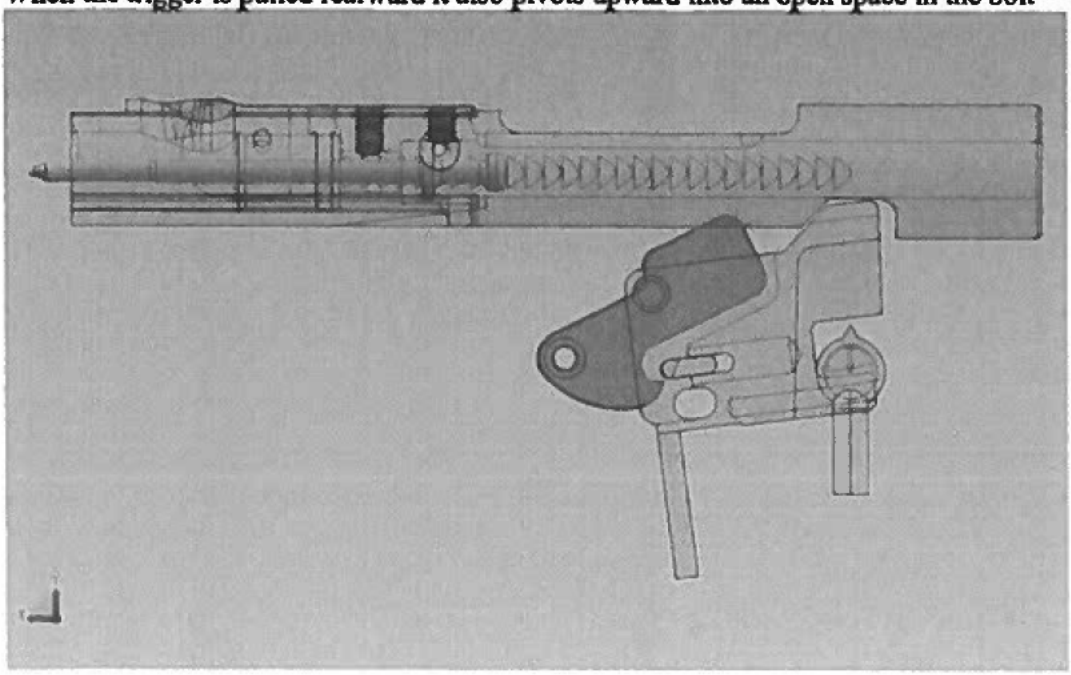


(In the rest of the images, not all parts are shown in all images and some are shown as transparent to clarify the interactions)

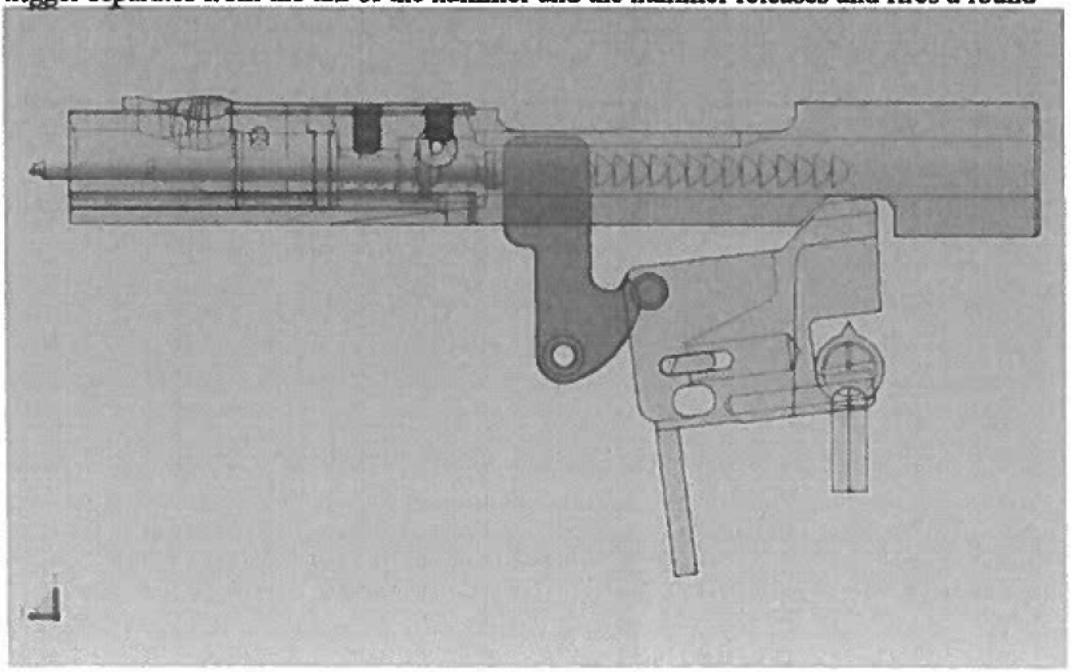


[redacted] AR1 Trigger:

When the trigger is pulled rearward it also pivots upward into an open space in the bolt

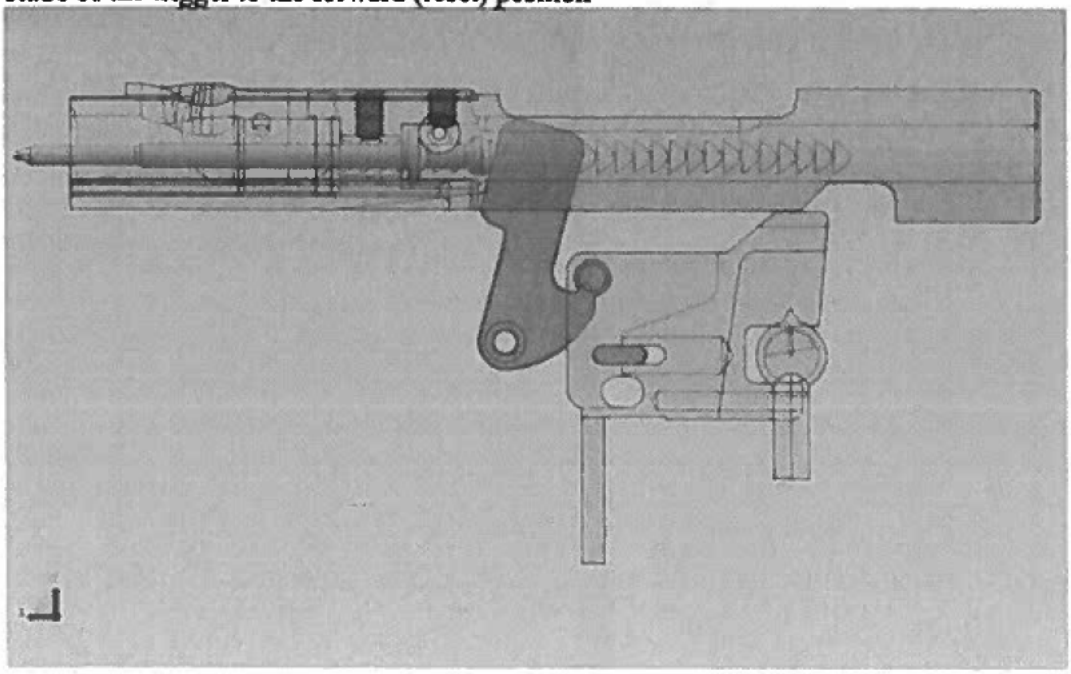


As the trigger pivots back and up into the open space in the bolt, the sliding sear surface in the trigger separates from the tail of the hammer and the hammer releases and fires a round

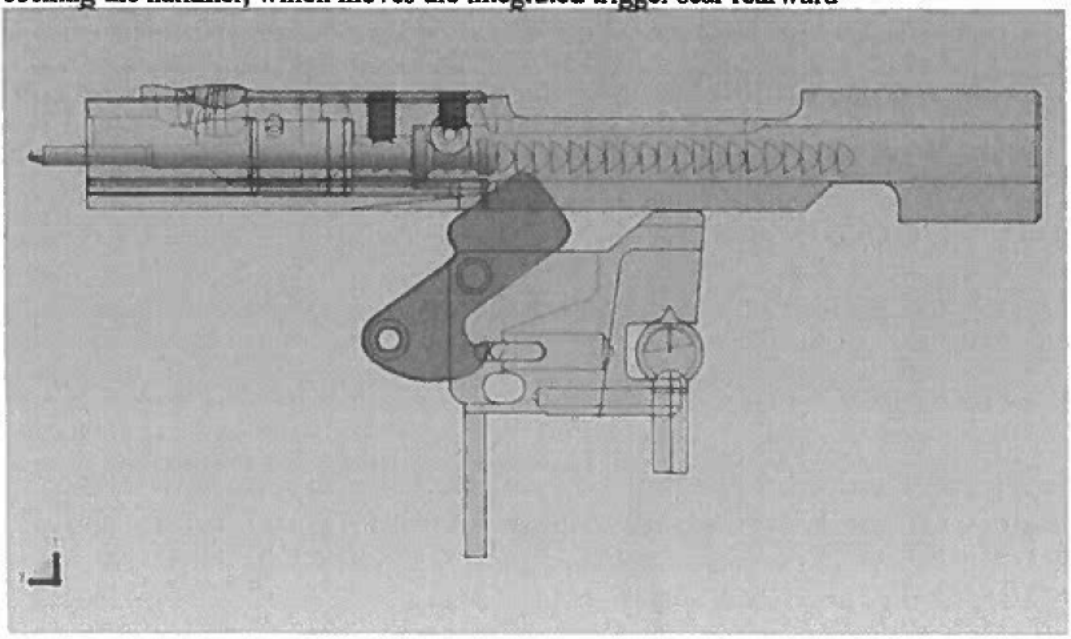


[redacted] AR1 Trigger:

The explosion of the bullet causes the bolt to move in a rearward direction. As the bolt moves rearward it contacts the top of the trigger and forces the top of the trigger down, pivoting the blade of the trigger to the forward (reset) position



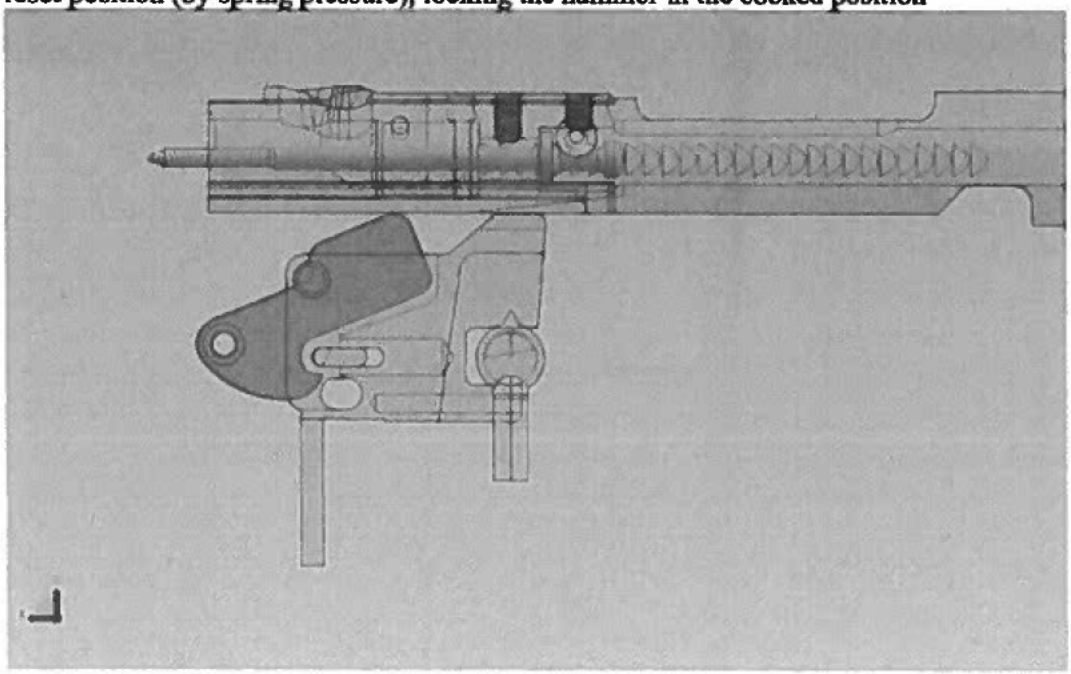
At this point the trigger is in the forward (unpulled) position. The bolt continues rearward cocking the hammer, which moves the integrated trigger sear rearward



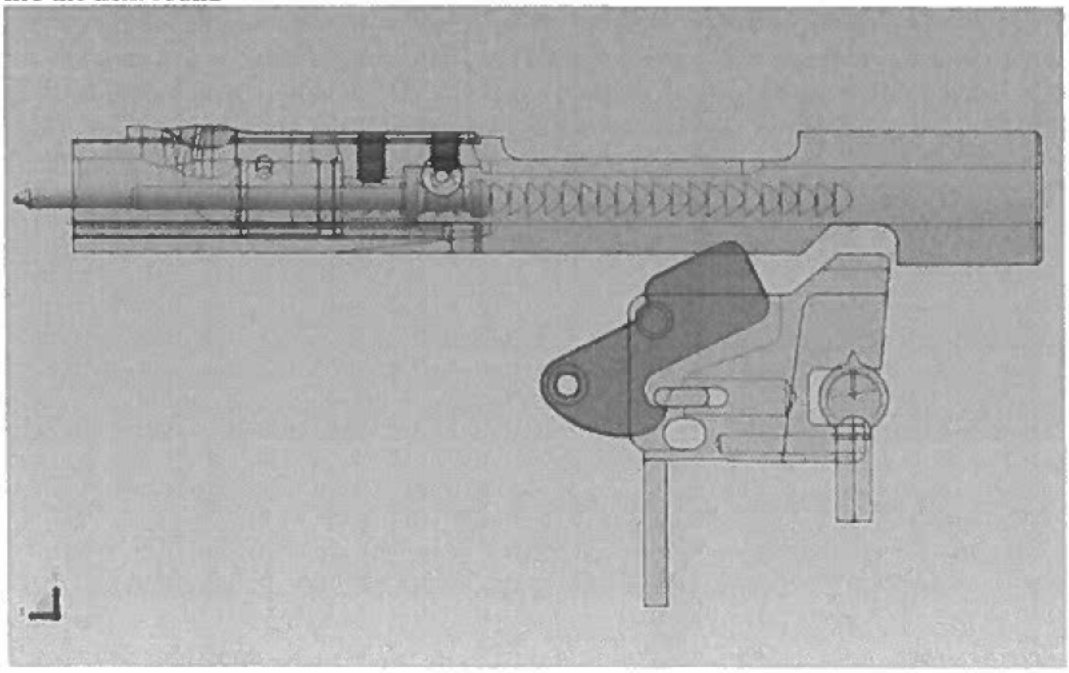
[redacted]AR1 Trigger:

5

At the rear of the bolt's stroke the hammer is cocked and the trigger sear is forced forward into a reset position (by spring pressure), locking the hammer in the cocked position



The bolt returns forward to battery and the hammer is now cocked against the trigger ready to fire the next round



[redacted] AR1 Trigger:

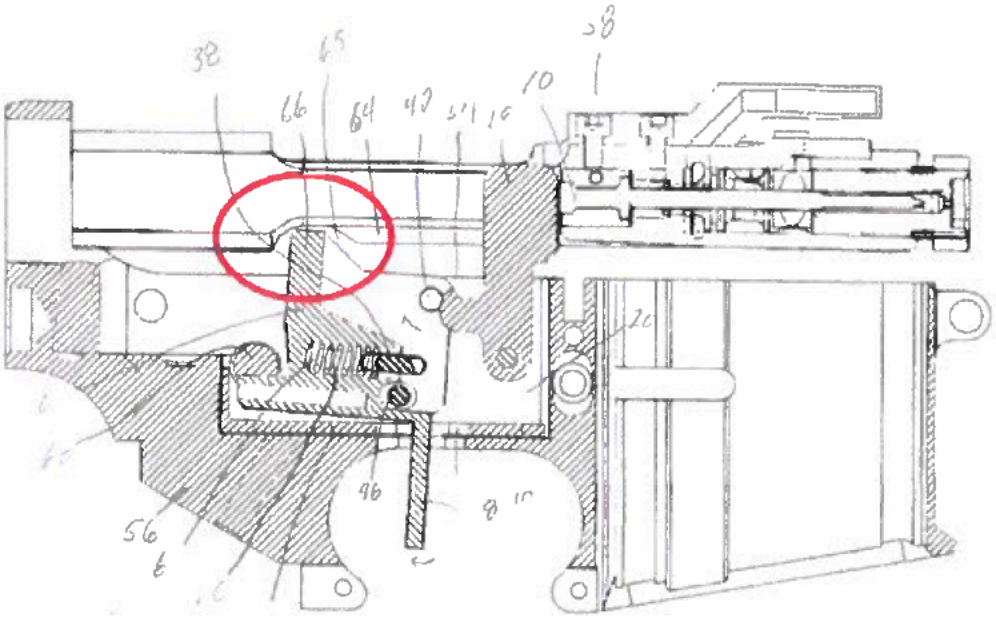
This is not an automatic sear, nor a conversion device. An automatic sear or a conversion device depends on a captured hammer that is tripped in some manner. This allows repetitive firing once the trigger is pulled rearward and the trigger remains in the pulled rearward position. The [redacted] AR1 trigger is a trigger finger reset device. The sequence of operation is designed so that when a shooter pulls the trigger and the weapon is fired, the trigger mechanically resets the user's trigger finger back to the original firing position. After the round has been fired, the trigger cannot be pulled during any part of the duration of the stroke of the bolt until the bolt has returned to battery. This ends the firing sequence or allows the user to mentally exert additional rearward pressure on the trigger to restart the firing sequence by pulling the trigger again. The design of the trigger mechanism is such that if the user maintains excessive rearward finger pressure on the trigger, the bolt's ability to return to battery will be impeded. The purpose and design of this device is to aid the user to fire a consecutive shot.

Conclusion:

It is our opinion that this is not a device designed or intended to create automatic fire. If you have any questions or need additional information I have authorized Rick Vasquez of Rick Vasquez Firearms LLC to act on my behalf. Rick Vasquez can be reached at [redacted] Thank you in advance for your efforts and we look forward to hearing your opinion.

[redacted] ARI Trigger:

7



This illustration depicts how the parts interact.

No.66 is the extension of the trigger that rests in the bolt cam.

No. 28 is the portion of the trigger that interacts with the user's finger.

No. 38 is the spring loaded sear.

No. 18 is the hammer.

From: Richard Vasquez
To: Fire Tech
Subject: Re: US Patent Information Evaluation 307385
Date: Monday, November 27, 2017 3:52:40 PM

The patent for the general mechanism is:
Flex-Fire technology
US 9568264

This patent was published (approved) Feb 14, 2017.

Sincerely,

Richard Vasquez
Rick Vasquez Firearms, LLC
235 Deer Creek Road
Winchester, VA
Phone: [redacted]
Email: [redacted]

On Mon, Nov 27, 2017 at 2:38 PM, <Fire.Tech@usdoj.gov> wrote:

> Our office is currently reviewing a submission from [redacted] (AR1 trigger) which appears to include a patent drawing. Has a patent been applied for on this device and if so, what would be the Name and patent number?
>
> Thank you, FTISB

790894154587

R7N

307–385

Delivered
Thursday 11/08/2018 at 12:36 pm

DELIVERED

Signed for by RROUDS

GET STATUS UPDATES

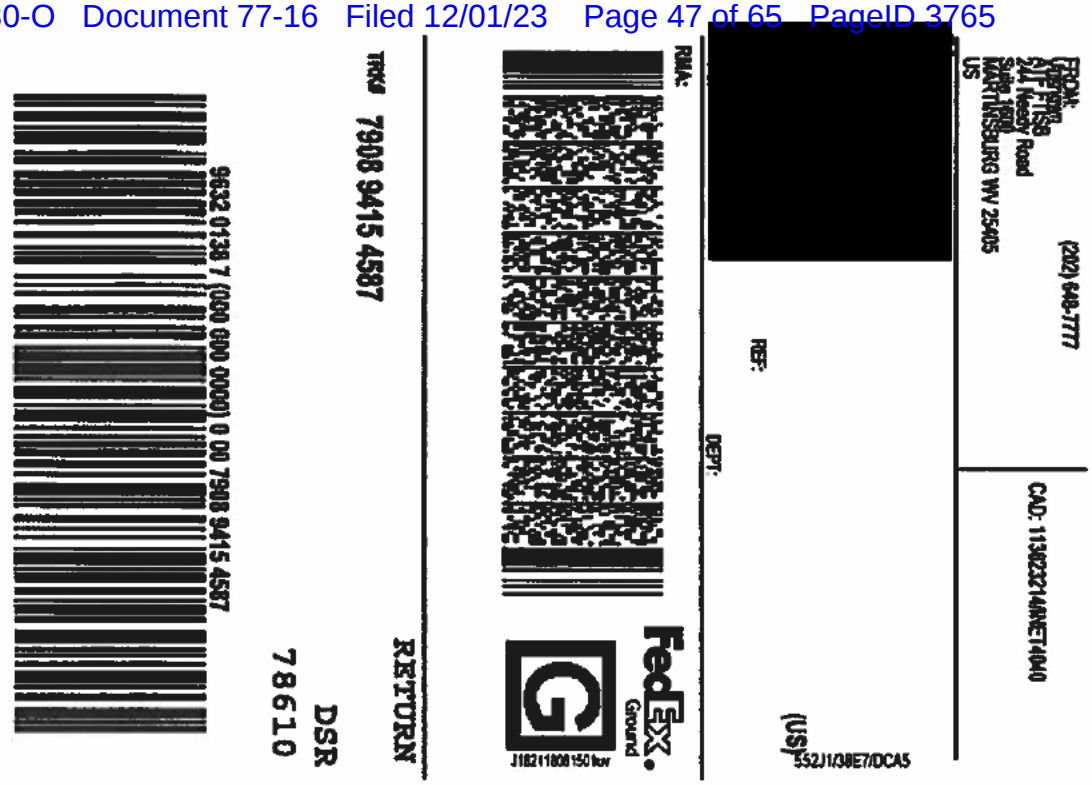
OBTAIN PROOF OF DELIVERY

FROM	TO
MARTINSBURG, WV US	Buda, TX US

Travel History

			Local Scan Time
Thursday, 11/08/2018			
12:36 pm	Buda, TX	Delivered	
4:26 am	AUSTIN, TX	On FedEx vehicle for delivery	
4:14 am	AUSTIN, TX	At local FedEx facility	
Wednesday, 11/07/2018			
10:28 pm	HUTCHINS, TX	Departed FedEx location	
12:16 pm	HUTCHINS, TX	Arrived at FedEx location	
6:49 am	HUTCHINS, TX	In transit	
Tuesday, 11/06/2018			
5:00 pm	LINDEN, TN	In transit	
3:59 am	HAGERSTOWN, MD	Departed FedEx location	
1:04 am	HAGERSTOWN, MD	Arrived at FedEx location	
12:21 am	WINCHESTER, VA	Left FedEx origin facility	
Monday, 11/05/2018			
9:02 pm	WINCHESTER, VA	Arrived at FedEx location	
11:25 am	WINCHESTER, VA	Picked up	
Thursday, 11/01/2018			
11:26 pm		Return label link emailed to return sender	

ATF 1000



Daris
Received
11/5/18

After printing this label:
1 Use the 'Print' button on this page to print your label to your laser or inkjet printer
2 Fold the printed page along the horizontal line
3 Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scan

Warning IMPORTANT TRANSMIT YOUR SHIPPING DATA AND PRINT A MANIFEST
At the end of each shipping day you should perform the FedEx Ground End of Day Close procedure to transmit your shipping dat ... Day Close Button If required, print the pickup manifest that appears A printed manifest is required to be tendered along with your packages if they en ... FedEx Ground If you are dropping your packages off at a FedEx drop off location, the manifest is not required

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide and applicable tariff available upon request FedEx will not be responsible for any claim in excess of $100 per package whether the result of loss damage delay non-delivery misdelivery or misinformation, unless you declare a higher value pay an additional charge document your actual loss and file a timely claim Limitations including limitations on our liability can be found in the current FedEx Service Guide and applicable tariff apply In no event shall FedEx Ground be liable for any special incidental or consequential damages including without limitation loss of profit loss to the intrinsic value of the package loss of sale interest income or attorney's fees Recovery cannot exceed actual documented loss Items of extraordinary value are subject to separate limitations of liability set forth in the Service Guide and tariff Written claims must be filed within strict time limits, see current FedEx Service Guide

From: Fire.Tech@usdoj.gov
Subject: RE: Submission for testing and classification
Date: September 17, 2018 at 7:40 AM
To: [redacted]

Sir,

You can forward the shipping label or FedEx Billing number referencing work order #307385 and note that item should not be shipped until Oct3.

Thankyou.

From: Fire Tech
Sent: Monday, September 17, 2018 7:53 AM
To:
Subject: FW: Submission for testing and classification

See below.

From: [redacted]
Sent: Friday, September 14, 2018 3:57 PM
To: Fire Tech <Fire_tech@atf.gov>
Subject: Re: Submission for testing and classification

I received a ruling on this submission. Attached is a photo of the letter I received in order to reference the ID #.

Per the last page of the letter, I would like to have the sample firearm and device returned as I have an 07/02 FFL/SOT. I accidentally failed to include a prepaid return shipping label with my submission but as I said, I would like it to be returned to me.

I will be away from my FFL shipping address until Tuesday, Oct 2nd. This would not matter except per the letter, I need to submit an ATF Form 2 by the close of the following business day that I receive the sample, and I will not be able to do that until Oct 3rd.

If this is not a problem I will send a prepaid common carrier shipping label or email a Fedex shipping account billing number.

Thank you kindly,
[redacted]

U.S. Department of Justice

Bureau of Alcohol, Tobacco,
Firearms and Explosives

Martinsburg, WV 25405

www.atf.gov

AUG 2 8 2018

907010: RKD
3311/307385

[redacted]

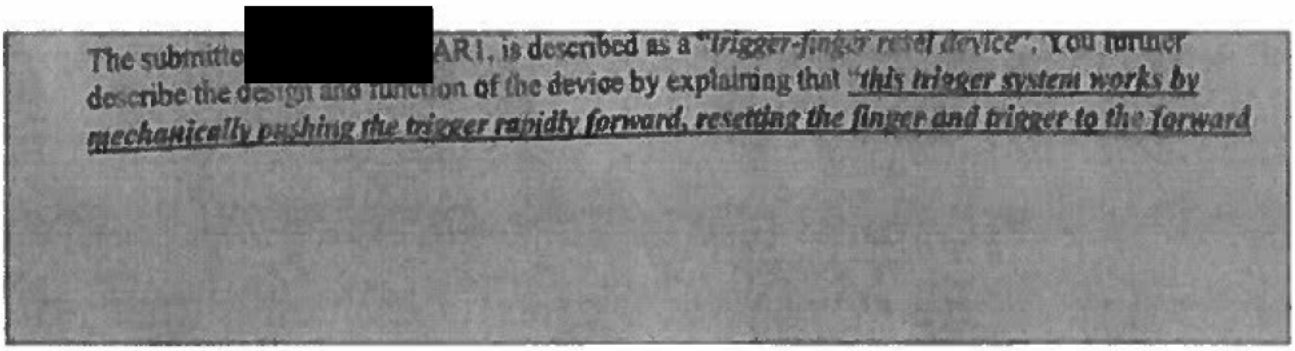
Dear Sir,

This is in reference to your submission and accompanying correspondence to, Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), Firearms Technology Industry Services Branch (FTISB), accompanied by an AR-15 type rifle equipped with what is described as the [redacted] AR1 trigger system (see enclosed photos). Specifically, you requested an examination and classification of this sample with regard to the amended Gun Control Act of 1968 (GCA) and the National Firearms Act (NFA).

As you know, the National Firearms Act (NFA), 26 U.S.C. § 5845(b), defines the term "machinegun" as—

...any weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. The term shall also include the frame or receiver of any such weapon, any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.

As specified in the GCA, 18 U.S.C. § 921(a)(23), the term "machinegun" has "*the meaning given such term in section 5845(b) of the National Firearms Act (26 U.S.C. 5845(b)).*


The submitte[redacted]AR1, is described as a "*trigger-finger reset device*". You further describe the design and function of the device by explaining that "*this trigger system works by mechanically pushing the trigger rapidly forward, resetting the finger and trigger to the forward*

On Aug 4, 2017, at 2:16 PM, Fire.Tech@usdoj.gov wrote:

Firearms and Ammunition Technology Division
Attn: FTISB
244 Needy Road Suite 1600
Martinsburg, West Virginia 25405

-----Original Message-----
From: [redacted]
Sent: Friday, August 4, 2017 1:26 PM
To: Fire Tech <Fire_tech@atf.gov>
Subject: Submission for testing and classification

Hello,

I am submitting a complete rifle for testing and classification and I would like to confirm that the following is the correct address.

Firearms and Ammunition Technology Division
244 Needy Road Suite 1600
Martinsburg, West Virginia 25405

When sending a complete rifle to this location, is signature required necessary?

Thank you,

[redacted]

U.S. Department of Justice

Bureau of Alcohol, Tobacco,
Firearms and Explosives

Tampa Field Division

Tampa, Florida 33602-3945

www.atf.gov

767000:AF
3310

JUL 2 6 2021

Mr. Kevin Maxwell
Rare Breed Trigger, LLC
733 W. Colonial Drive
Orlando, FL 32804

Dear Mr. Maxwell:

This is in reference to the Rare Breed Triggers, model FRT-15, manufactured and marketed by your company. The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) examined this trigger and determined it to be a machinegun as defined in the National Firearms Act (NFA).

The NFA defines a firearm to include, in relevant part, "a machinegun." 26 United States Code (U.S.C.) § 5845(a)(6). A machinegun is defined under section 5845(b) as –

> any weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. The term shall also include the frame or receiver of any such weapon, *any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun*, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.

Italics Added.

As the Rare Breed Triggers FRT-15 is a machinegun under the NFA, it is subject to the registration, transfer, taxation, and possession restrictions applicable to these regulated weapons, which include criminal penalties relating to the illegal transfer and possession of said weapons. *See* 26 U.S.C., Chapter 53; *see also* 26 U.S.C. § 5871 (any person who violates or fails to comply with the provisions of the NFA shall be fined $10,000 per violation and is subject to imprisonment for a term of up to ten years). Additionally, machineguns are also subject to the Gun Control Act of 1968, as amended (GCA), *see* 18 U.S.C. § 921(a)(23), and are subject to prohibitions regarding the possession, transfer, and transport of such items as set forth in 18 U.S.C. §§ 922(o) and 922(a)(4).

Mr. Kevin Maxwell
Rare Breed Trigger

The manufacture and sale of a machinegun is subject to significant legal restrictions and compliance under the GCA and the NFA. The NFA requires that the manufacturer register each firearm manufactured in the National Firearms Registration and Transfer Record. *See* 26 U.S.C. § 5841; 27 C.F.R. § 479.101. Any firearm manufactured and/or transferred in violation of the NFA, and/or subject to the NFA, and possessed by a person to whom it is not registered, is a violation of the NFA and subject to seizure and forfeiture. *See* 26 U.S.C. §§ 5861, 5872.

ATF has concluded the Rare Breed Triggers, model FRT-15, is a combination of parts designed and intended for use in converting a weapon into a machinegun, hence, the FRT-15 has been classified as a "machinegun" as defined by the NFA and GCA. ATF's examination found the Rare Breed Triggers, model FRT-15, allows a firearm to expel more than one shot, without manual reloading, with a single, continuous pull of the trigger. Because the FRT-15 is properly classified as a "machinegun" you must immediately take the following actions:

1. **Cease and desist all manufacture and transfer of the Rare Breed Trigger FRT-15.**

2. **Contact ATF within 5 days of receipt of this letter to develop a plan for addressing those machineguns already distributed.**

The NFA levies a $200 tax on each firearm made and an additional $200 tax on each firearm transferred. *See* 26 U.S.C. §§ 5811, 5821. Rare Breed Triggers may be liable for a $200 making tax and a $200 transfer tax on each FRT-15 made and transferred.

For public safety reasons, your cooperation in this matter is essential. Your failure to take the above steps may result in (1) law enforcement action by ATF, including a referral of this matter to the United States Attorney's Office for criminal prosecution; (2) tax assessment and collection; and/or (3) seizure and forfeiture of the firearms and property involved in violations of Federal law.

If you have any questions, and to discuss the plan referenced above, please contact Special Agent in Charge, Tampa Field Division, Craig Saier at 813-202-7300.

Sincerely,

Craig Saier
Special Agent in Charge
Tampa Field Division

JS 44 (Rev. 04/21)

CIVIL COVER SHEET

The JS 44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. *(SEE INSTRUCTIONS ON NEXT PAGE OF THIS FORM.)*

I. (a) PLAINTIFFS

Rare Breed Triggers, LLC
Kevin C. Maxwell

(b) County of Residence of First Listed Plaintiff Orange
(EXCEPT IN U.S. PLAINTIFF CASES)

(c) Attorneys *(Firm Name, Address, and Telephone Number)*
Kevin C. Maxwell, Esq.
733 West Colonial Dr
Orlando FL 32804

DEFENDANTS

MERRICK GARLAND, Attorney General
CRAIG SAIER, Special Agent, ATF

County of Residence of First Listed Defendant Washington, DC
(IN U.S. PLAINTIFF CASES ONLY)

NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED.

Attorneys *(If Known)*

Attachment M

II. BASIS OF JURISDICTION *(Place an "X" in One Box Only)*

- ☐ 1 U.S. Government Plaintiff
- ☐ 3 Federal Question *(U.S. Government Not a Party)*
- ☒ 2 U.S. Government Defendant
- ☐ 4 Diversity *(Indicate Citizenship of Parties in Item III)*

III. CITIZENSHIP OF PRINCIPAL PARTIES *(Place an "X" in One Box for Plaintiff and One Box for Defendant)*
(For Diversity Cases Only)

	PTF	DEF		PTF	DEF
Citizen of This State	☐ 1	☐ 1	Incorporated *or* Principal Place of Business In This State	☐ 4	☐ 4
Citizen of Another State	☐ 2	☐ 2	Incorporated *and* Principal Place of Business In Another State	☐ 5	☐ 5
Citizen or Subject of a Foreign Country	☐ 3	☐ 3	Foreign Nation	☐ 6	☐ 6

IV. NATURE OF SUIT *(Place an "X" in One Box Only)*

Click here for: Nature of Suit Code Descriptions.

CONTRACT
- ☐ 110 Insurance
- ☐ 120 Marine
- ☐ 130 Miller Act
- ☐ 140 Negotiable Instrument
- ☐ 150 Recovery of Overpayment & Enforcement of Judgment
- ☐ 151 Medicare Act
- ☐ 152 Recovery of Defaulted Student Loans (Excludes Veterans)
- ☐ 153 Recovery of Overpayment of Veteran's Benefits
- ☐ 160 Stockholders' Suits
- ☐ 190 Other Contract
- ☐ 195 Contract Product Liability
- ☐ 196 Franchise

TORTS

PERSONAL INJURY
- ☐ 310 Airplane
- ☐ 315 Airplane Product Liability
- ☐ 320 Assault, Libel & Slander
- ☐ 330 Federal Employers' Liability
- ☐ 340 Marine
- ☐ 345 Marine Product Liability
- ☐ 350 Motor Vehicle
- ☐ 355 Motor Vehicle Product Liability
- ☐ 360 Other Personal Injury
- ☐ 362 Personal Injury - Medical Malpractice

PERSONAL INJURY
- ☐ 365 Personal Injury - Product Liability
- ☐ 367 Health Care/ Pharmaceutical Personal Injury Product Liability
- ☐ 368 Asbestos Personal Injury Product Liability

PERSONAL PROPERTY
- ☐ 370 Other Fraud
- ☐ 371 Truth in Lending
- ☐ 380 Other Personal Property Damage
- ☐ 385 Property Damage Product Liability

FORFEITURE/PENALTY
- ☐ 625 Drug Related Seizure of Property 21 USC 881
- ☐ 690 Other

LABOR
- ☐ 710 Fair Labor Standards Act
- ☐ 720 Labor/Management Relations
- ☐ 740 Railway Labor Act
- ☐ 751 Family and Medical Leave Act
- ☐ 790 Other Labor Litigation
- ☐ 791 Employee Retirement Income Security Act

IMMIGRATION
- ☐ 462 Naturalization Application
- ☐ 465 Other Immigration Actions

BANKRUPTCY
- ☐ 422 Appeal 28 USC 158
- ☐ 423 Withdrawal 28 USC 157

INTELLECTUAL PROPERTY RIGHTS
- ☐ 820 Copyrights
- ☐ 830 Patent
- ☐ 835 Patent - Abbreviated New Drug Application
- ☐ 840 Trademark
- ☐ 880 Defend Trade Secrets Act of 2016

SOCIAL SECURITY
- ☐ 861 HIA (1395ff)
- ☐ 862 Black Lung (923)
- ☐ 863 DIWC/DIWW (405(g))
- ☐ 864 SSID Title XVI
- ☐ 865 RSI (405(g))

FEDERAL TAX SUITS
- ☐ 870 Taxes (U.S. Plaintiff or Defendant)
- ☐ 871 IRS—Third Party 26 USC 7609

OTHER STATUTES
- ☐ 375 False Claims Act
- ☐ 376 Qui Tam (31 USC 3729(a))
- ☐ 400 State Reapportionment
- ☐ 410 Antitrust
- ☐ 430 Banks and Banking
- ☐ 450 Commerce
- ☐ 460 Deportation
- ☐ 470 Racketeer Influenced and Corrupt Organizations
- ☐ 480 Consumer Credit (15 USC 1681 or 1692)
- ☐ 485 Telephone Consumer Protection Act
- ☐ 490 Cable/Sat TV
- ☐ 850 Securities/Commodities/ Exchange
- ☒ 890 Other Statutory Actions
- ☐ 891 Agricultural Acts
- ☐ 893 Environmental Matters
- ☐ 895 Freedom of Information Act
- ☐ 896 Arbitration
- ☐ 899 Administrative Procedure Act/Review or Appeal of Agency Decision
- ☐ 950 Constitutionality of State Statutes

REAL PROPERTY
- ☐ 210 Land Condemnation
- ☐ 220 Foreclosure
- ☐ 230 Rent Lease & Ejectment
- ☐ 240 Torts to Land
- ☐ 245 Tort Product Liability
- ☐ 290 All Other Real Property

CIVIL RIGHTS
- ☐ 440 Other Civil Rights
- ☐ 441 Voting
- ☐ 442 Employment
- ☐ 443 Housing/ Accommodations
- ☐ 445 Amer. w/Disabilities - Employment
- ☐ 446 Amer. w/Disabilities - Other
- ☐ 448 Education

PRISONER PETITIONS

Habeas Corpus:
- ☐ 463 Alien Detainee
- ☐ 510 Motions to Vacate Sentence
- ☐ 530 General
- ☐ 535 Death Penalty

Other:
- ☐ 540 Mandamus & Other
- ☐ 550 Civil Rights
- ☐ 555 Prison Condition
- ☐ 560 Civil Detainee - Conditions of Confinement

V. ORIGIN *(Place an "X" in One Box Only)*

☒ 1 Original Proceeding ☐ 2 Removed from State Court ☐ 3 Remanded from Appellate Court ☐ 4 Reinstated or Reopened ☐ 5 Transferred from Another District *(specify)* ☐ 6 Multidistrict Litigation - Transfer ☐ 8 Multidistrict Litigation - Direct File

VI. CAUSE OF ACTION

Cite the U.S. Civil Statute under which you are filing *(Do not cite jurisdictional statutes unless diversity)*:
28 USC 2201 and 2202, 5 USC 706

Brief description of cause:
Complaint for declaratory and injunctive relief

VII. REQUESTED IN COMPLAINT:

☐ CHECK IF THIS IS A CLASS ACTION UNDER RULE 23, F.R.Cv.P.

DEMAND $

CHECK YES only if demanded in complaint:
JURY DEMAND: ☐ Yes ☐ No

VIII. RELATED CASE(S) IF ANY

(See instructions): JUDGE _____ DOCKET NUMBER _____

DATE
Aug 2, 2021

SIGNATURE OF ATTORNEY OF RECORD
/s/ Kevin C. Maxwell, Esq

FOR OFFICE USE ONLY

RECEIPT # _____ AMOUNT _____ APPLYING IFP _____ JUDGE _____ MAG. JUDGE _____

ATF 1007

INSTRUCTIONS FOR ATTORNEYS COMPLETING CIVIL COVER SHEET FORM JS 44

Authority For Civil Cover Sheet

The JS 44 civil cover sheet and the information contained herein neither replaces nor supplements the filings and service of pleading or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. Consequently, a civil cover sheet is submitted to the Clerk of Court for each civil complaint filed. The attorney filing a case should complete the form as follows:

I.(a) Plaintiffs-Defendants. Enter names (last, first, middle initial) of plaintiff and defendant. If the plaintiff or defendant is a government agency, use only the full name or standard abbreviations. If the plaintiff or defendant is an official within a government agency, identify first the agency and then the official, giving both name and title.

(b) County of Residence. For each civil case filed, except U.S. plaintiff cases, enter the name of the county where the first listed plaintiff resides at the time of filing. In U.S. plaintiff cases, enter the name of the county in which the first listed defendant resides at the time of filing. (NOTE: In land condemnation cases, the county of residence of the "defendant" is the location of the tract of land involved.)

(c) Attorneys. Enter the firm name, address, telephone number, and attorney of record. If there are several attorneys, list them on an attachment, noting in this section "(see attachment)".

II. Jurisdiction. The basis of jurisdiction is set forth under Rule 8(a), F.R.Cv.P., which requires that jurisdictions be shown in pleadings. Place an "X" in one of the boxes. If there is more than one basis of jurisdiction, precedence is given in the order shown below.
United States plaintiff. (1) Jurisdiction based on 28 U.S.C. 1345 and 1348. Suits by agencies and officers of the United States are included here.
United States defendant. (2) When the plaintiff is suing the United States, its officers or agencies, place an "X" in this box.
Federal question. (3) This refers to suits under 28 U.S.C. 1331, where jurisdiction arises under the Constitution of the United States, an amendment to the Constitution, an act of Congress or a treaty of the United States. In cases where the U.S. is a party, the U.S. plaintiff or defendant code takes precedence, and box 1 or 2 should be marked.
Diversity of citizenship. (4) This refers to suits under 28 U.S.C. 1332, where parties are citizens of different states. When Box 4 is checked, the citizenship of the different parties must be checked. (See Section III below; **NOTE: federal question actions take precedence over diversity cases.**)

III. Residence (citizenship) of Principal Parties. This section of the JS 44 is to be completed if diversity of citizenship was indicated above. Mark this section for each principal party.

IV. Nature of Suit. Place an "X" in the appropriate box. If there are multiple nature of suit codes associated with the case, pick the nature of suit code that is most applicable. Click here for: Nature of Suit Code Descriptions.

V. Origin. Place an "X" in one of the seven boxes.
Original Proceedings. (1) Cases which originate in the United States district courts.
Removed from State Court. (2) Proceedings initiated in state courts may be removed to the district courts under Title 28 U.S.C., Section 1441.
Remanded from Appellate Court. (3) Check this box for cases remanded to the district court for further action. Use the date of remand as the filing date.
Reinstated or Reopened. (4) Check this box for cases reinstated or reopened in the district court. Use the reopening date as the filing date.
Transferred from Another District. (5) For cases transferred under Title 28 U.S.C. Section 1404(a). Do not use this for within district transfers or multidistrict litigation transfers.
Multidistrict Litigation – Transfer. (6) Check this box when a multidistrict case is transferred into the district under authority of Title 28 U.S.C. Section 1407.
Multidistrict Litigation – Direct File. (8) Check this box when a multidistrict case is filed in the same district as the Master MDL docket.
PLEASE NOTE THAT THERE IS NOT AN ORIGIN CODE 7. Origin Code 7 was used for historical records and is no longer relevant due to changes in statute.

VI. Cause of Action. Report the civil statute directly related to the cause of action and give a brief description of the cause. **Do not cite jurisdictional statutes unless diversity.** Example: U.S. Civil Statute: 47 USC 553 Brief Description: Unauthorized reception of cable service.

VII. Requested in Complaint. Class Action. Place an "X" in this box if you are filing a class action under Rule 23, F.R.Cv.P.
Demand. In this space enter the actual dollar amount being demanded or indicate other demand, such as a preliminary injunction.
Jury Demand. Check the appropriate box to indicate whether or not a jury is being demanded.

VIII. Related Cases. This section of the JS 44 is used to reference related pending cases, if any. If there are related pending cases, insert the docket numbers and the corresponding judge names for such cases.

Date and Attorney Signature. Date and sign the civil cover sheet.

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF FLORIDA
ORLANDO DIVISION

RARE BREED TRIGGERS, LLC, a Florida Limited Liability Company, and KEVIN C. MAXWELL, an individual,

Plaintiffs, **CASE NO.:**

v.

MERRICK GARLAND, in his official capacity as Attorney General of the United States; U.S. DEPARTMENT OF JUSTICE; BUREAU OF ALCOHOL, TOBACCO, FIREARMS AND EXPLOSIVES; CRAIG SAIER, in his capacity as Special Agent in Charge of the Tampa Field Division, Bureau of Alcohol, Tobacco, Firearms, and Explosives; and MARVIN RICHARDSON, in his official capacity as Acting Director, Bureau of Alcohol, Tobacco, Firearms, and Explosives,

Defendants.

_____/

KEVIN C. MAXWELL'S AFFIDAVIT

STATE OF FLORIDA

COUNTY OF ORANGE

BEFORE ME, the undersigned authority, personally appeared KEVIN C. MAXWELL who, after being duly sworn, deposes and says:

Exhibit "A"

1. I am over the age of eighteen (18) years, and I have personal knowledge of the facts contained herein, and I am otherwise competent to testify to these matters.

2. I am a licensed attorney in good standing in the State of Florida and in the United States District Court for the Middle District of Florida, and my practice is located at 733 W. Colonial Drive, Orlando, Florida 32804.

3. I am also the sole owner and counsel for RARE BREED TRIGGERS, LLC, a Florida Limited Liability Company ("RBT"), which shares a mailing address with my law office of 733 W. Colonial Drive, Orlando, Florida 32804.

4. RBT sells a patented semiautomatic trigger referred to as the "FRT-15".

5. The drawing, diagrams, and videos showing the FRT-15's functions are on file with RBT.

6. The FRT-15 is a semiautomatic trigger, meaning that only one round is expelled by each function of the trigger.

7. The FRT-15 functions like other semi-automatic firearms following eight steps in operation: Firing, Unlocking, Extracting, Ejecting, Cocking, Feeding, Chambering, and Locking. With the bolt locked in the chamber, a round in the chamber, and safety off, the cycle of operation begins as a shooter pulls the trigger, the round fires. As the round passes the gas port most of that gas is vented through

the gas tube and begins the process of sending the bolt carrier to the rear. When that process starts the bolt unlocks, the brass is an extracted from the chamber and ejected from the firearm. Like all AR-15 firearms, as the bolt carrier moves to the rear it cocks the hammer. In the FRT-15's patented design, as the bolt carrier cocks the hammer, the cocking hammer also forces a reset on the trigger, which pushes the shooters finger forward. This FORCED RESET is what make the FRT-15 legal under the NFA, because it requires the shooter to pull or function the trigger again in order to fire another round. Simultaneously, as the trigger is forced into a reset position, a locking bar, which is part of the trigger assembly, pivots into position, mechanically locking the trigger forward, preventing the FRT-15 Trigger from functioning (being pulled) again until the cycle of operation is complete, with the bolt locking into the loaded chamber. As the buffer spring, behind the bolt carrier, pushes the bolt carrier forward, a new round is fed from the magazine. That new round is in forced into the chamber as the bolt closes and locks into place. Only after the bolt locks into place inside the chamber is the locking bar is disengaged which allows the shooter to pull the trigger again. Until the trigger is pulled again, the firearm will not and cannot fire. In fact, pulling the trigger to the rear with enough force to overcome the forced reset function will cause the firearm to cease operation.

8. Thus, while the FRT-15 allows for a more rapid subsequent firing of the next round by the firearm, it does not allow more than one round of ammunition to be expelled per function of the trigger.

9. Before the FRT-15 ever went to manufacturing, I submitted the prototype to legal counsel, Kevin P. McCann, Esq., seeking a legal opinion letter about the FRT-15's compliance with the federal law – specifically whether it fit the definition of a "machinegun".

10. Mr. McCann is personally known to me and has legal practice and is a former ATF Resident Agent in Charge, he retired from the ATF after 25 years.

11. It is my understanding from Defendant SAC (Craig Saier) he is well-aware of Mr. McCann's reputation and expertise.

12. On or about July 31, 2020, Mr. McCann provided a legal opinion letter on this subject ("McCann Opinion Letter"). A true and correct copy of the McCann Opinion Letter is attached to my Complaint and to my motions for injunctive relief.

13. Mr. McCann provided a full analysis of the function of the FRT-15 and he analyzed its function against the definition of a "machinegun" under federal law.

14. Mr. McCann concluded that the FRT-15 does not meet the definition of a "machinegun" under federal law.

15. The Plaintiffs further sought a second opinion on the FRT-15 prototype from International Firearms Specialist Academy ("IFSA") in Dallas, Texas.

16. On or about August 6, 2020, received an opinion from IFSA's Director, Daniel O'Kelly. Mr. O'Kelly is also a former ATF Senior Special Agent and the Chief Firearms Technology Instructor at the ATF National Academy, where he wrote and co-wrote the entire firearms technology course of study used to train Agents and Investigators on among other things, what is and is not a machinegun.

17. Mr. O'Kelly provided his detailed analysis of the FRT-15's function against the definition of a "machinegun" under federal law, and he also concluded that the FRT-15 does not meet the definition of a "machinegun" under federal law. ("IFSA Opinion Letter"). A true and correct copy of the IFSA Opinion Letter is attached is attached to my Complaint and to my motions for injunctive relief.

18. After the FRT-15 went into manufacturing, I sought two additional examinations and opinions from two additional national firearms experts to ensure that any development changed to aid in the manufacturing of the FRT-15 had not changed its function in any way that would cause it to fall under the definition of a "machinegun".

19. On or about February 24, 2021, the Plaintiffs received an opinion letter from Rick Vasquez, another former ATF Special Agent and Former Acting Chief of the Firearms Technology Branch. Where he served as the ATF's expert on all Gun Control Act and National Firearms Act identification and classifications. Firearms

Technology Branch is arm of the ATF which it is alluded to have conducted the examination upon which the Cease and Desist letter is based.

20. Mr. Vasquez again analyzed the functions of the FRT-15 against the definition of a "machinegun" under federal law and concluded that the manufactured version of the FRT-15 does not meet the definition of a "machinegun" ("Vasquez Opinion Letter). A true and correct copy of the Vasquez Opinion Letter is attached to my Complaint and to my motions for injunctive relief.

21. On or about May 4, 2021, we received an opinion letter from Firearms Training and Interstate Nexus Consulting, LLC ("FTINC") in Grand Rapids, Michigan, via the company's owner, Brian Luettke.

22. Mr. Luettke is another former ATF Special Agent, with 22 years with ATF, an instructor at the ATF's National Academy teaching the application of Gun Control Act and National Firearms Act identification and classifications and in his last position with ATF, was Chief of Advanced Firearms and Interstate Nexus Branch, a sub-branch of the Firearms and Ammunition Technology Branch. He provided the Plaintiffs with yet another opinion letter once again analyzing the functions of the manufactured version of the FRT-15 and comparing it against the definition of a "machinegun" under federal law.

23. Mr. Luettke also concluded that the manufactured version of the FRT-15 does not meet the definition of a "machinegun" ("FRINC Opinion Letter). A true

and correct copy of the FRINC Opinion Letter is attached to my Complaint and to my motions for injunctive relief.

24. I have personal knowledge that these four experts are well known to the Defendants not only because of their former employment as ATF special agents, but also because the DOJ and ATF presented them as experts in cases and criminal prosecutions on the subject of what does and does not constitute a "machinegun" under federal law.

25. I specifically sought out the opinion of qualified counsel and the other experts in good faith because I did not want myself or RBT to take any action that was in violation of the law.

26. In reliance upon the opinions of our legal counsel and the opinions of these well-qualified industry experts and former ATF agents, we proceeded to sell the FRT-15.

27. On or about July 26, 2021, the DOJ, acting thorough the ATF, contacted me requesting a meeting with SAC.

28. When that meeting took place the following day, SAC, with the attendance of his legal counsel, informed the Plaintiffs he had been directed by his chain of command at the ATF to issue the Plaintiffs a Cease and Desist Letter because the ATF had "examined" the FRT-15 and had determined it to be a "machinegun" under the definitions of the above-cited federal laws.

29. I requested to see this alleged "examination", however, SAC advised me that he did not have the examination and had never seen it.

30. SAC then hand delivered the Cease and Desist Letter to me. A true and correct copy of the ATF Letter is attached to my Complaint and to my motions for injunctive relief.

31. As I pointed out to SAC, the Cease and Desist Letter bases all of its directives on an this alleged "examination" which has never been provided, and it does not reveal the method of testing or examination applied by the ATF's Tampa Field Division in order to reach the conclusion that the FRT-15 is a machinegun.

32. It also provides no details as to its conclusion other than to say that the FRT-15 allows more than one round of ammunition to be expelled at a time.

33. Knowing that this was not true, I advised SAC that I completely disagreed with any conclusion which suggests the FRT-15 can shoot more than one round by a single function of the trigger.

34. I further informed SAC that this was not just my opinion because before the first FRT-15 was manufactured, the design was reviewed in detail by Retired Special Agent Kevin McCann, Esq., and former ATF Senior Special Agent, Program Manager and Chief Firearms Technology Instructor Daniel G. O'Kelly, specifically for the FRT-15 compliance with both the NFA and the Gun Control Act, and that both had rendered the opinion that the FRT-15 is not a machinegun.

35. At that time SAC confirmed to me that he is fully-aware of who Mr. McCann is and of his qualifications.

36. I further advised SAC that I was deeply concerned about this conclusion because the ATF's Firearms Technology Branch has previously approved a forced (positive) reset trigger similar to the FRT-15 (called the 3MR trigger) in October 2013, and to the best of my knowledge and belief, the 3MR trigger design remains approved and available on the open market. A true and correct copy of the October 31, 2013 approval letter for the 3MR trigger is attached to my Complaint and to my motions for injunctive relief.

37. Despite this, SAC informed me that RBT had to immediately cease manufacturing and transferring all FRT-15 units, and within five (5) days we had to make arrangements with the ATF to develop a plan for reacquiring all the FRT-15 units that have already been sold.

38. SAC further advised me that if their demands are not met, they intend to criminally prosecute me, seize our assets, and assess and collect taxes.

39. If this occurs, both myself and RBT, as well as RBT's customers, will be irreparably harmed.

40. Not only will RBT's customers lose the monetary value of their possessions (through forced surrender, confiscation, or destruction) and their ability

to use them, but all future customers of RBT will be deprived of the ability to purchase and use the FRT-15.

41. Such customers of RBT will then inevitably seek chargebacks against RBT when such property is seized which will cause irreparable financial harm to the company.

42. Further, the seizing of assets of the Plaintiffs will cause RBT's business to collapse and will cut off my personal income and seriously effect my ability to provide for himself and my family.

43. This will force RBT to close its business and to disclose its confidential customer lists or risk felony prosecution.

44. Further, the ATF's actions will place me, as a practicing attorney, at risk of suspension of my legal license due to any criminal prosecution wrongfully brought by the Defendants.

45. Because RBT and my legal practice share a common mailing address, any seizure of property by the Defendants, such as files or computers, creates an inherent and unacceptable risk of the wrongful disclosure of privileged and protected attorney/client communications, as well as protected attorney work-product and other protected intellectual property such as copyrighted documents.

46. I have requested the SAC withdraw the Cease and Desist notice and provide me the unredacted examination mentioned in The Letter. He has declined.

Upon his declination I advised him of my intent to file a Complaint for Declaratory and Injunctive Relief, a Motion for Preliminary Injunction, and a Motion for a Temporary Restraining Order. I have provided the SAC and his legal counsel, Amy Freyermuth, Esquire, with all pleadings and exhibit documents via email as Notice of this action

FURTHER AFFIANT SAYETH NAUGHT.

Kevin C. Maxwell, Affiant

Notary

SWORN TO AND SUBSCRIBED before ~~me this~~ 2nd day of August _____, 2021 by Kevin C. Maxwell, who is personally known to me, or who has produced _____ _____ as identification, and who did take an oath.

Signed _____

My Commission Expires:

(Seal)

ANA V HERNANDEZ
Commission # GG 235494
Expires November 5, 2022
Bonded Thru Budget Notary Services

ATF 1019